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September 22, 2003

U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Attention: Document Control Desk

Subject: Oconee Nuclear Station
Docket Numbers 50-269, 270, and 287
Supplement to License Amendment Request for Full-Scope Implementation of the Alternate Source Term
Technical Specification Change (TSC) Number 2001-07

On October 16, 2001, Duke Energy (Duke) submitted the license amendment request (LAR) for full-scope implementation of the Alternate Source Term (AST). This LAR requested approval of the AST analysis methodology for Oconee Nuclear Station (ONS) that will support simplification of Ventilation System testing requirements during core alterations or movement of irradiated fuel. Duke received additional questions from the NRC related to the AST LAR. Supplements to the LAR were submitted on May 20, 2002, September 12, 2002, November 21, 2002 and January 27, 2003.

In the original submittal, Penetration Room Ventilation System (PRVS) and Spent Fuel Pool Ventilation System (SFPVS) were removed from the Technical Specifications (TS). After additional conversations with the NRC, Duke committed to maintaining these TS. However, the requirements of these TS will be relaxed as a result of AST. Duke also intends to adopt TSTF-51 and the language associated with recently irradiated fuel to support the dose analysis assumption with respect to movement of irradiated fuel.

A001

Additionally, Duke is submitting revised dose analyses that reflect a range of control room inleakage and unfiltered Emergency Core Cooling System leakages that better represent future operation.

Notes are being added to the Completion Times for the proposed Control Room Ventilation System (CRVS) TS conditions for one and two inoperable CRVS Booster Fan trains, respectively. The notes will allow for a one time additional completion time extension to implement the Control Room Intake/Booster Fan modification.

Duke's October 16, 2001, submittal and May 20, 2002, response to RAI (Request 5) describe a planned modification to route Letdown Storage Tank (LDST) and Low Pressure Injection (LPI) leakage to the Reactor Building Emergency Sump (RBES). The scope of this modification has changed from the scope described in the above submittals. A new drain line that contains remotely operated Motor Operated Valves (MOVs) is being installed from the outlet of the LDST to the RBES. The new LDST drain line will allow High Pressure Injection (HPI) pump minimum flow to be returned to the RBES via the LDST. The new LDST drain piping will be sized such that pressurization of the LDST to the point at which the LDST relief valve (HP-79) actuates will not occur; thus, eliminating the relief valve (HP-79) as a potential source of out leakage during Loss Of Coolant Accident (LOCA) events. A new design pressure for LPI system piping adjacent to the LPI thermal relief valves will be established. The LPI system re-rating will allow the setpoints of the relief valves to be increased to a higher actuation point such that relief valve actuation will not occur during certain LOCA scenarios. Preventing the actuation of these relief valves during LOCA events is necessary to prevent RBES inventory loss and excessive operator dose rates.

Attachment 1 contains a re-typed copy of the TS, Attachment 2 contains the marked-up copies of the TS, Attachment 3 contains justification for the changes requested and Attachment 4 contains a revised NSHC. Attachment 5 contains revised dose analysis.

Duke has committed to the following three modifications as a part of the AST LAR: a dual air intake system to the Control Room; a reroute of LDST and LPI leakage to the RBES; and a passive caustic addition system. These modifications will be completed on all three units by the end of 2005.

Pursuant to 10 CFR 50.91, a copy of this proposed license amendment is being sent to the State of South Carolina.

If there are any questions regarding this submittal, please contact Reene' Gambrell at (864) 885-3364.

Very truly yours,

R. A. Jones, Vice President
Oconee Nuclear Site

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Bureau of Land and Waste Management
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R. A. Jones, being duly sworn, states that he is Vice President, Oconee Nuclear Site, Duke Energy Corporation, that he is authorized on the part of said Company to sign and file with the U. S. Nuclear Regulatory Commission this revision to the Renewed Facility Operating License Nos. DPR-38, DPR-47, DPR-55; and that all the statements and matters set forth herein are true and correct to the best of his knowledge.

R. A. Jones, Vice President
Oconee Nuclear Site

Subscribed and sworn to before me this 22nd day of September, 2003

Notary Public

My Commission Expires:
6/12/2013

ATTACHMENT 1
Duke Energy Corporation
Retype of Technical Specifications

REMOVE PAGE	INSERT PAGE
3.3.16-1	3.3.16-1
3.3.16-2	3.3.16-2
3.7.9-1	3.7.9-1
3.7.9-2	3.7.9-2
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B 3.3.16-1	B 3.3.16-1
B 3.3.16-2	B 3.3.16-2
B 3.3.16-3	B 3.3.16-3
B 3.7.9-2	B 3.7.9-2
B 3.7.9-3	B 3.7.9-3
B 3.7.9-4	B 3.7.9-4
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B 3.7.10-1	B 3.7.10-1
B 3.7.10-2	B 3.7.10-2
B 3.7.10-3	B 3.7.10-3
B 3.7.10-4	B 3.7.10-4
B 3.7.16-4	B 3.7.16-4
B 3.7.16-6	B 3.7.16-6
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B 3.7.17-1	B 3.7.17-1
B 3.7.17-2	B 3.7.17-2
B 3.7.17-3	B 3.7.17-3
B 3.8.2-1	B 3.8.2-1
B 3.8.2-2	B 3.8.2-2
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B 3.8.2-4	B 3.8.2-4
B 3.8.2-5	B 3.8.2-5
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B 3.8.7-1	B 3.8.7-1
B 3.8.7-2	B 3.8.7-2
B 3.8.7-3	B 3.8.7-3
B 3.8.9-1	B 3.8.9-1
B 3.8.9-2	B 3.8.9-2
B 3.8.9-3	B 3.8.9-3
B 3.9.3-1	B 3.9.3-1
B 3.9.3-2	B 3.9.3-2
B 3.9.3-3	B 3.9.3-3
B 3.9.3-4	B 3.9.3-4
B 3.9.3-5	B 3.9.3-5
B 3.9.6-1	B 3.9.6-1
B 3.9.6-2	B 3.9.6-2
B 3.9.6-3	B 3.9.6-3

3.3 INSTRUMENTATION

3.3.16 Reactor Building (RB) Purge Isolation – High Radiation

LCO 3.3.16 One channel of Reactor Building Purge Isolation – High Radiation shall be OPERABLE.

APPLICABILITY: During movement of recently irradiated fuel assemblies within the containment.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One channel inoperable.	A.1 Place and maintain RB purge valves in closed positions.	Immediately
	<u>OR</u>	
	A.2 Suspend movement of recently irradiated fuel assemblies within the containment.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.16.1	Perform CHANNEL CHECK.	12 hours
SR 3.3.16.2	Perform CHANNEL FUNCTIONAL TEST.	Once each refueling outage prior to movement of recently irradiated fuel assemblies within containment
SR 3.3.16.3	Perform CHANNEL CALIBRATION.	18 months

3.7 PLANT SYSTEMS

3.7.9 Control Room Ventilation System (CRVS) Booster Fans

LCO 3.7.9 Two CRVS Booster Fan trains shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4,
During movement of recently irradiated fuel assemblies.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Control Room pressure ≤ 0.0 psig during operation of two CRVS Booster Fan trains.	A.1 Restore Control Room pressure to > 0.0 psig during operation of two CRVS Booster Fan trains.	30 days
B. One CRVS Booster Fan train inoperable for reasons other than Condition A.	B.1 Restore CRVS Booster Fan train to OPERABLE status.	------------NOTE------------ An additional 96 hours is allowed when entering this condition for implementation of Control Room intake/booster fan modification. ------------------------------- 72 hours

(continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. Two CRVS Booster Fan trains inoperable for reasons other than Condition A.	C.1	Restore one CRVS Booster Fan train to OPERABLE status.	------------NOTE------------ An additional 48 hours is allowed when entering this condition for implementation of Control Room intake/booster fan modification. -------------------------------- 24 hours
D. Required Action and associated Completion Time not met in MODE 1, 2, 3, or 4.	D.1	Be in MODE 3.	12 hours
	<u>AND</u>		
	D.2	Be in MODE 5	36 hours
E. Required Action and associated Completion Time not met during movement of recently irradiated fuel assemblies.	E.1	Suspend movement of recently irradiated fuel assemblies.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.9.1	Operate each CRVS Booster Fan train for ≥ 1 hour.	92 days
SR 3.7.9.2	Perform required CRVS Booster Fan train filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP
SR 3.7.9.3	Verify two CRVS Booster Fan trains can maintain the Control Room at a positive pressure.	18 months

3.7 PLANT SYSTEMS

3.7.10 Penetration Room Ventilation System (PRVS)

LCO 3.7.10 Two PRVS trains shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One PRVS train inoperable.	A.1 Restore PRVS train to OPERABLE status.	90 days
B. Two PRVS trains inoperable. OR Required Action and associated Completion Time of Condition A not met.	B.1 Submit a written report to the NRC outlining the plan for restoring the system to OPERABLE status.	30 days

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.10.1	Operate each PRVS train for ≥ 15 minutes.	6 months
SR 3.7.10.2	Perform required PRVS filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP
SR 3.7.10.3	Verify each PRVS train actuates on an actual or simulated actuation signal.	18 months
SR 3.7.10.4	Verify one PRVS train can maintain flow ≥ 800 cfm and ≤ 1200 cfm.	18 months on a STAGGERED TEST BASIS

3.7 PLANT SYSTEMS

3.7.16 Control Room Area Cooling Systems (CRACS)

LCO 3.7.16 Two CRACS trains shall be OPERABLE as follows:

a. Two trains of the Control Room Ventilation System (CRVS) shall be OPERABLE, and

b. Two trains of the Chilled Water (WC) System shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4,
During movement of recently irradiated fuel assemblies.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One CRVS train inoperable.	A.1 Restore CRVS train to OPERABLE status.	30 days
B. One WC train inoperable.	B.1 Restore WC train to OPERABLE status.	30 days
C. Control Room area air temperature not within limit.	----------------NOTE---------------- LCO 3.0.4 is not applicable. -------------------------------------- C.1 Restore Control Room area air temperature within limit.	 7 days

(continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
D. Required Action and associated Completion Time not met in MODE 1, 2, 3, or 4.	D.1	Be in MODE 3.	12 hours
	AND		
	D.2	Be in MODE 5.	36 hours
E. Required Action and associated Completion Time not met during movement of recently irradiated fuel assemblies.	E.1	Place OPERABLE CRACS train in operation.	Immediately
	OR		
	E.2	Suspend movement of recently irradiated fuel assemblies.	Immediately
F. Two CRVS trains inoperable during MODE 1, 2, 3, or 4. OR Two WC Trains inoperable during MODE 1,2,3, or 4.	F.1	Enter LCO 3.0.3.	Immediately
G. Two CRACS trains inoperable during movement of recently irradiated fuel assemblies.	G.1	Suspend movement of recently irradiated fuel assemblies.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.16.1	Verify temperature in Control Room and Cable Room is ≤ 80°F and temperature in Electrical Equipment Room is ≤ 85°F.	12 hours

3.7 PLANT SYSTEMS

3.7.17 Spent Fuel Pool Ventilation System (SFPVS)

LCO 3.7.17 Two SFPVS trains shall be OPERABLE.

---NOTES---

Not applicable during reracking operations with no fuel in the spent fuel pool.

APPLICABILITY: During movement of recently irradiated fuel in the spent fuel pool.
During crane operations with loads over the spent fuel pool.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One SFPVS train inoperable.	A.1 Restore SFPVS train to an OPERABLE status.	90 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. Two SFPVS trains inoperable. OR Required action and associated completion time for Condition A not met.	B.1.1	Submit a written report to the NRC outlining the plans for restoring the system to an OPERABLE status.	30 days

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.17.1	Operate each SFPVS train for ≥ 15 minutes.	6 months
SR 3.7.17.2	Perform required SFPVS filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP

APPLICABILITY: MODES 5 and 6,
During movement of recently irradiated fuel assemblies.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required offsite source inoperable.	----------------NOTE---------------- Enter applicable Conditions and Required Actions of LCO 3.8.9, with required equipment de-energized as a result of Condition A. --	
	A.1 Declare affected required feature(s) with no offsite power available inoperable.	Immediately
	<u>OR</u>	
	A.2.1 Suspend CORE ALTERATIONS.	Immediately
	<u>AND</u>	
	A.2.2 Suspend movement of recently irradiated fuel assemblies.	Immediately
	<u>AND</u>	
	A.2.3 Initiate action to suspend operations involving positive reactivity additions.	Immediately
	<u>AND</u>	
	A.2.4 Initiate action to restore required offsite power source to OPERABLE status.	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. One required emergency power source inoperable.	B.1	Suspend CORE ALTERATIONS.	Immediately
	AND		
	B.2	Suspend movement of recently irradiated fuel assemblies.	Immediately
	AND		
	B.3	Initiate action to suspend operations involving positive reactivity additions.	Immediately
	AND		
	B.4	Initiate action to restore required emergency power source to OPERABLE status.	Immediately

3.8 ELECTRICAL POWER SYSTEMS

3.8.4 DC Sources – Shutdown

LCO 3.8.4 125 VDC Vital I&C power source(s) shall be OPERABLE to support the 125 VDC Vital I&C power panelboard(s) required by LCO 3.8.9,"Distribution Systems – Shutdown" and shall include at least one of the unit's 125 VDC Vital I&C power sources.

APPLICABILITY: MODES 5 and 6,
During movement of recently irradiated fuel assemblies.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required 125 VDC Vital I&C power sources inoperable.	A.1 Declare affected required feature(s) inoperable.	Immediately
	OR	
	A.2.1 Suspend CORE ALTERATIONS.	Immediately
	AND	
	A.2.2 Suspend movement of recently irradiated fuel assemblies.	Immediately
	AND	
	A.2.3 Initiate action to suspend operations involving positive reactivity additions.	Immediately
	AND	
		(continued)

3.8 ELECTRICAL POWER SYSTEMS

3.8.7 Vital Inverters – Shutdown

LCO 3.8.7 Vital Inverters shall be OPERABLE to support the onsite 120 VAC Vital Instrumentation power panelboard(s) required by LCO 3.8.9, "Distribution Systems – Shutdown."

APPLICABILITY: MODES 5 and 6,
During movement of recently irradiated fuel assemblies.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required vital inverters inoperable.	A.1 Declare affected required equipment inoperable.	Immediately
	<u>OR</u>	
	A.2.1 Suspend CORE ALTERATIONS.	Immediately
	<u>AND</u>	
	A.2.2 Suspend movement of recently irradiated fuel assemblies.	Immediately
	<u>AND</u>	
	A.2.3 Initiate action to suspend operations involving positive reactivity additions.	Immediately
	<u>AND</u>	
	A.2.4 Initiate action to restore required inverters to OPERABLE status.	Immediately

3.8 ELECTRICAL POWER SYSTEMS

3.8.9 Distribution Systems – Shutdown

LCO 3.8.9 The necessary portion of main feeder buses, ES power strings, 125 VDC Vital I&C power panelboards, 230 kV Switchyard 125 VDC power panelboards and 120 VAC Vital Instrumentation power panelboards shall be OPERABLE to support equipment required to be OPERABLE.

APPLICABILITY: MODES 5 and 6,
During movement of recently irradiated fuel assemblies.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required main feeder buses, ES power strings, 125 VDC Vital I&C power panelboards, 230 kV Switchyard 125 VDC power panelboards or 120 VAC Vital Instrumentation power panelboards inoperable.	A.1 Declare associated supported required equipment inoperable.	Immediately
	<u>OR</u>	
	A.2.1 Suspend CORE ALTERATIONS.	Immediately
	<u>AND</u>	
	A.2.2 Suspend movement of recently irradiated fuel assemblies.	Immediately
	<u>AND</u>	
	A.2.3 Initiate action to suspend operations involving positive reactivity additions.	Immediately
	<u>AND</u>	
		(continued)

3.9 REFUELING OPERATIONS

3.9.3 Containment Penetrations

LCO 3.9.3 The containment penetrations shall be in the following status:

a. The equipment hatch closed and held in place by a minimum of four bolts;

b. One door in each air lock closed; and

------------------------------------NOTE-----------------------------
An emergency air lock door is not required to be closed when a temporary cover plate is installed.
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c. Each penetration providing direct access from the containment atmosphere to the outside atmosphere either:

1. closed by a manual, non-automatic power operated or automatic isolation valve, blind flange, or equivalent, or

2. capable of being closed by an OPERABLE Reactor Building Purge supply and exhaust isolation signal.

APPLICABILITY: During movement of recently irradiated fuel assemblies within containment.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more containment penetrations not in required status.	A.1 Suspend movement of recently irradiated fuel assemblies within containment.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.3.1	Verify each required containment penetration is in the required status.	7 days
SR 3.9.3.2	Verify each required Reactor Building Purge supply and exhaust isolation valve that is not locked, sealed or otherwise secured in the isolation position actuates to the isolation position on an actual or simulated high radiation actuation signal.	Once each refueling outage prior to movement of recently irradiated fuel assemblies within containment

3.9 REFUELING OPERATIONS

3.9.6 Fuel Transfer Canal Water Level

LCO 3.9.6 Fuel transfer canal water level shall be maintained ≥ 21.34 ft above the top of the reactor vessel flange.

APPLICABILITY: During movement of irradiated fuel assemblies within containment.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Fuel transfer canal water level not within limit.	A.1 Suspend movement of irradiated fuel assemblies within containment.	Immediately

5.5 Programs and Manuals

5.5.2 Containment Leakage Rate Testing Program (continued)

This program shall be in accordance with the guidelines contained in Regulatory Guide 1.163, "Performance-Based Containment Leak-Test Program," dated September 1995. Containment system visual examinations required by Regulatory Guide 1.163, Regulatory Position C.3 shall be performed as follows:

1. Accessible concrete surfaces and post-tensioning system component surfaces of the concrete containment shall be visually examined prior to initiating SR 3.6.1.1 Type A test. These visual examinations, or any portion thereof, shall be performed no earlier than 90 days prior to the start of refueling outages in which Type A tests will be performed. The validity of these visual examinations will be evaluated should any event or condition capable of affecting the integrity of the containment system occur between the completion of the visual examinations and the Type A test.

2. Accessible interior and exterior surfaces of metallic pressure retaining components of the containment system shall be visually examined at least three times every ten years, including during each shutdown for SR 3.6.1.1 Type A test, prior to initiating the Type A test.

Type B and C testing shall be implemented in the program in accordance with the requirements of 10 CFR 50, Appendix J, Option A.

The peak calculated containment internal pressure for the design basis loss of coolant accident, P_a, is 59 psig.

The maximum allowable containment leakage rate, L_a, at P_a, shall be 0.20% of the containment air weight per day.

Leakage rate acceptance criteria are:

a. Containment leakage rate acceptance criterion is $\leq 1.0\ L_a$. During the first unit startup following testing in accordance with this program, the leakage rate acceptance criteria are $\leq 0.60\ L_a$ for the Type B and Type C tests, and $\leq 0.75\ L_a$ for Type A tests;

The provisions of SR 3.0.3 are applicable to the Containment Leakage Rate Testing Program.

5.5 Programs and Manuals (continued)

5.5.11 Secondary Water Chemistry

This program provides controls for monitoring secondary water chemistry to inhibit SG tube degradation. The program shall include:

a. Identification of a sampling schedule for the critical variables and control points for these variables;

b. Identification of the procedures used to measure the values of the critical variables;

c. Identification of process sampling points;

d. Procedures for the recording and management of data;

e. Procedures defining corrective actions for all off control point chemistry conditions; and

f. A procedure identifying the authority responsible for the interpretation of the data and the sequence and timing of administrative events, which is required to initiate corrective action.

5.5.12 Ventilation Filter Testing Program (VFTP)

A program shall be established to implement the following required testing of filter ventilation systems. CRVS testing will be conducted at the frequencies specified in Regulatory Guide 1.52, Revision 2.

The VFTP is applicable to the Penetration Room Ventilation System (PRVS), the Control Room Ventilation System (CRVS) Booster Fan Trains, and the Spent Fuel Pool Ventilation System (SFPVS).

a. Demonstrate, for the PRVS, that a dioctyl phthalate (DOP) test of the high efficiency particulate air (HEPA) filters shows ≥ 90% removal when tested in accordance with ANSI N510-1975 at the system design flow rate ± 20%.

b. Demonstrate, for the CRVS Booster Fan Trains, that a DOP test of the HEPA filters shows ≥ 99.5% removal when tested at in accordance with ANSI N510-1975 at the system design flow rate ± 10%.

c. Demonstrate, for the PRVS, that a halogenated hydrocarbon test of the carbon adsorber shows ≥ 90% removal when tested in accordance with ANSI N510-1975 at the system design flow rate ± 20%.

5.5 Programs and Manuals

5.5.12 Ventilation Filter Testing Program (VFTP) (continued)

d. Demonstrate, for the CRVS Booster Fan Trains, that a halogenated hydrocarbon test of the carbon adsorber shows ≥ 99% removal when tested at in accordance with ANSI N510-1975 at the system design flow rate ± 10%.

e. Demonstrate, for the CRVS Booster Fan Trains, PRVS and SFPVS, that a laboratory test of a sample of the carbon adsorber shows ≥ 97.5%, 90%, and 90% radioactive methyl iodide removal when tested in accordance with ASTM D3803-1989 (30°C, 95% RH), respectively.

f. Demonstrate, for the PRVS, that the pressure drop across the combined HEPA filters and carbon adsorber banks is < 6 in. of water at the nominal system flow rate.

g. Demonstrate, for the CRVS Booster Fan Trains, that the pressure drop across the pre-filter is ≤ 1 in. of water and the pressure drop across the HEPA filters is ≤ 2 in. of water at the system design flow rate ± 10%.

h. Demonstrate, for the SFPVS, that a dioctyl phthalate (DOP) test of the high efficiency particulate air (HEPA) filters shows ≥ 90% removal when tested in accordance with ANSI N510-1975 at the system design flow rate ± 20%.

i. Demonstrate, for the SFPVS, that a halogenated hydrocarbon test of the carbon adsorber shows ≥ 90% removal when tested in accordance with ANSI N510-1975 at the system design flow rate ± 20%.

The provisions of SR 3.0.2 and SR 3.0.3 are applicable to the VFTP test frequencies.

5.5.13 Explosive Gas and Storage Tank Radioactivity Monitoring Program

This program provides controls for potentially explosive gas mixtures contained in the waste gas holdup tanks and the quantity of radioactivity contained in waste gas holdup tanks, and the quantity of radioactivity contained in unprotected outdoor liquid storage tanks. The gaseous radioactivity quantities shall be determined. The liquid radwaste quantities shall be determined by analyzing a representative sample of the tank's contents at least once per 7 days when radioactive materials are being added to the tank.

5.6 Reporting Requirements (continued)

5.6.5 CORE OPERATING LIMITS REPORT (COLR) (continued)

(7) DPC-NE-3000-P-A, Thermal Hydraulic Transient Analysis Methodology;

(8) DPC-NE-2005-P-A, Thermal Hydraulic Statistical Core Design Methodology;

(9) DPC-NE-3005-P-A, UFSAR Chapter 15 Transient Analysis Methodology; and

(10) BAW-10227-P-A, Evaluation of Advanced Cladding and Structural Material (M5) in PWR Reactor Fuel.

The COLR will contain the complete identification for each of the Technical Specifications referenced topical reports used to prepare the COLR (i.e., report number, title, revision number, report date or NRC SER date, and any supplements).

c. The core operating limits shall be determined such that all applicable limits (e.g., fuel thermal mechanical limits, core thermal hydraulic limits, Emergency Core Cooling System (ECCS) limits, nuclear limits such as SDM, transient analysis limits, and accident analysis limits) of the safety analysis are met.

d. The COLR, including any midcycle revisions or supplements, shall be provided upon issuance for each reload cycle to the NRC.

5.6.6 Post Accident Monitoring (PAM), Main Feeder Bus Monitor Panel (MFPMP), Penetration Room Ventilation System (PRVS), and Spent Fuel Pool Ventilation System (SFPVS) Report

When a report is required by Condition B or G of LCO 3.3.8, "Post Accident Monitoring (PAM) Instrumentation" or Condition D of LCO 3.3.23, "Main Feeder Bus Monitor Panel," a report shall be submitted within the following 14 days. The report shall outline the preplanned alternate method of monitoring (PAM only), the cause of the inoperability, and the plans and schedule for restoring the instrumentation channels of the Function to OPERABLE status.

When a report is required by Condition B of LCO 3.7.10, "Penetration Room Ventilation System," or Condition B of LCO 3.7.17, "Spent Fuel Pool Ventilation System," a report shall be submitted within 30 days outlining the plan for restoring the system to OPERABLE status.

5.6 Reporting Requirements (continued)

5.6.7 Tendon Surveillance Report

Any abnormal degradation of the containment structure detected during the tests required by the Pre-stressed Concrete Containment Tendon Surveillance Program shall be reported to the NRC within 30 days. The report shall include a description of the tendon condition, the condition of the concrete (especially at tendon anchorages), the inspection procedures, the tolerances on cracking, and the corrective action taken

5.6.8 Steam Generator Tube Inspection Report

The steam generator tube inspection report shall comply with the following:

a. The number of tubes plugged or repaired in each steam generator shall be reported to the NRC within 30 days following the completion of the plugging or repair procedure.

b. The results of the steam generator tube inservice inspection shall be reported to the NRC within 3 months following completion of the inspection. This report shall include:

    1. Number and extent of tubes inspected.

    2. Location and percent of wall-thickness penetration for each indication of a degraded tube.

    3. Identification of tubes plugged or repaired.

    4. Number of tubes repaired by rerolling and number of indications detected in the new roll area of the repaired tubes.

c. Results of steam generator tube inspections which fall into Category C-3 and require notification to the NRC shall be reported prior to resumption of plant operation. The written report shall provide the results of investigations conducted to determine cause of the tube degradation and corrective measures taken to prevent recurrence.

d. The designation of affected and unaffected areas will be reported to the NRC when they are determined.

B 3.3 INSTRUMENTATION

B 3.3.16 Reactor Building (RB) Purge Isolation–High Radiation

BASES

BACKGROUND

The RB Purge Isolation–High Radiation Function closes the RB purge valves. This action isolates the RB atmosphere from the environment to minimize releases of radioactivity in the event an accident occurs.

The radiation monitoring system measures the activity in a representative sample of air drawn in succession through a particulate sampler, an iodine sampler, and a gas sampler. The LCO addresses only the gas sampler portion of this system (RIA-45).

The trip setpoint is chosen sufficiently below hazardous radiation levels to ensure that the consequences of an accident will be acceptable, provided the unit is operated within the LCOs at the onset of an accident or transient and the equipment functions as designed.

The closure of the purge valves ensures the RB remains as a barrier to fission product release. There is no bypass for this function.

APPLICABLE SAFETY ANALYSES

During movement of irradiated fuel assemblies within containment, the most severe radiological consequences result from a fuel handling accident. The fuel handling accident is a postulated event that involves damage to irradiated fuel (Ref. 1). A minimum fuel transfer canal water level and the minimum decay time of 72 hours prior to movement of irradiated fuel assemblies from the reactor ensure that the release of fission product radioactivity subsequent to a fuel handling accident results in doses that are within the guideline values specified in 10 CFR 50.67. The design basis for fuel handling accidents has historically separated the radiological consequences from the containment capability. The NRC staff has treated the containment capability for fuel handling conditions as a logical part of the "primary success path" to mitigate fuel handling accidents, regardless of the assumptions used to calculate the radiological consequences of such accidents (Ref. 1).

The RB Purge Isolation System satisfies Criterion 3 of 10 CFR 50.36 (Ref. 2).

BASES (continued)

LCO

One channel of RB Purge Isolation-High Radiation instrumentation is required to be OPERABLE. OPERABILITY of the instrumentation includes proper operation of the sample pump. This LCO addresses only the gas sampler portion of the System.

APPLICABILITY

The RB purge isolation–high radiation instrumentation shall be OPERABLE whenever movement of recently irradiated fuel assemblies within the RB is taking place. These conditions are those under which the potential for fuel damage, and thus radiation release, is the greatest. While in MODES 1, 2, 3, and 4, the Purge Valve Isolation System does not need to be OPERABLE because the purge valves are required to be sealed closed. While in MODES 5 and 6, without fuel handling involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous 72 hours) in progress, the Purge Valve Isolation System does not need to be OPERABLE because the potential for a radioactive release is minimized. The need to use the purge valves in MODES 5 and 6 is in preparation for entry. This capability is required to minimize doses for personnel entering the building and is independent of the automatic isolation capability.

ACTIONS

A.1, A.2.1, and A.2.2

Condition A applies to failure of the high radiation purge function during movement of recently irradiated fuel assemblies within the RB.

With one channel inoperable during movement of recently irradiated fuel assemblies within the RB, the RB purge valves must be closed, or movement of recently irradiated fuel assemblies within the RB must be suspended. Required Action A.1 accomplishes the function of the high radiation channel. Required Action A.2.1 and Required Action A.2.2 place the unit in a configuration in which purge isolation on high radiation is not required. The Completion Time of "Immediately" is consistent with the urgency associated with the loss of RB isolation capability under conditions in which the fuel handling accidents involving handling recently irradiated fuel are possible and the high radiation function provides the only automatic actions to mitigate radiation release.

SURVEILLANCE REQUIREMENTS

SR 3.3.16.1

SR 3.3.16.1 is the performance of the CHANNEL CHECK for the RB purge isolation–high radiation instrumentation once every 12 hours to ensure that a gross failure of instrumentation has not occurred. The CHANNEL CHECK is normally a comparison of the parameter indicated on the

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.16.1 (continued)

radiation monitoring instrumentation channel to a similar parameter on other channels. It is based on the assumption that instrument channels monitoring the same parameter should read approximately the same value. Significant deviations between two instrument channels could be an indication of excessive instrument drift in one of the channels or of something even more serious. Performance of the CHANNEL CHECK helps to ensure that the instrumentation continues to operate properly between each CHANNEL CALIBRATION. The high radiation instrumentation should be compared to similar unit instruments located throughout the unit. If the radiation monitor uses keep alive sources or check sources OPERABLE from the control room, the CHANNEL CHECK should also note the detector's response to these sources.

Agreement criteria are based on a combination of the channel instrument uncertainties, including isolation, indication, and readability. If a channel is outside the criteria, it may be an indication that the transmitter or the signal processing equipment has drifted outside its limit. If the channels are within the criteria, it is an indication that the channels are OPERABLE. The 12 hour Frequency, about once every shift, is based on operating experience that demonstrates channel failure is rare. Additionally, control room alarms and annunciators are provided to alert the operator to various "trouble" conditions associated with the instrument.

SR 3.3.16.2

This SR requires the performance of a CHANNEL FUNCTIONAL TEST to ensure that the channel can perform its intended function. The frequency requires the isolation capability of the reactor building purge valves to be verified functional once each refueling outage prior to movement of recently irradiated fuel assemblies within containment. This ensures that this function is verified prior to recently irradiated fuel assembly handling within containment. This test verifies the capability of the instrumentation to provide the RB isolation.

SR 3.3.16.3

CHANNEL CALIBRATION is a complete check of the instrument loop and the sensor. The test verifies that the channel responds to a measured parameter within the necessary range and accuracy.

The 18 month Frequency is based on engineering judgment and industry accepted practice.

BASES

LCO (continued)

The CRVS Booster Fan trains are considered OPERABLE when the individual components necessary to control operator exposure are OPERABLE in both trains. A CRVS Booster Fan train is considered OPERABLE when the associated:

a. Booster Fan is OPERABLE;

b. HEPA filter and carbon absorber are not excessively restricting flow, and are capable of performing their filtration functions; and

c. Ductwork, valves, and dampers are OPERABLE, and control room pressurization can be maintained with both trains operating.

In addition, the control room boundary, including the integrity of the walls, floors, ceilings, ductwork, and access doors, must be maintained within the assumptions of the design analysis.

Breaches (excluding the removal of system performance test port caps per testing procedures) in the CRVS, most commonly due to the opening of access doors, introduces the possibility of allowing unfiltered or unanalyzed concentrations of inleakage into the Control Room. This applies to breaches of the outside air filter trains, main air handling units and all ductwork outside the Control Room pressure boundary. Breaches are equivalent to two Booster Fan trains out of service.

APPLICABILITY

In MODES 1, 2, 3, and 4, the CRVS Booster Fan trains must be OPERABLE to reduce radiation dose to personnel in the control room during and following an accident.

During movement of recently irradiated fuel assemblies, the CRVS Booster Fan trains must be OPERABLE to cope with a release due to a fuel handling accident involving handling recently irradiated fuel. Due to radioactive decay, CRVS is only required to mitigate fuel handling accidents involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous 72 hours).

ACTIONS

A.1

With the two CRVS Booster Fan trains incapable of pressurizing the control room, the capability to pressurize the control room must be restored within 30 days. In this Condition, the capability to minimize the radiation dose to personnel located in the control room during and after an accident is not assured. One or both CRVS Booster Fan trains may

BASES

ACTIONS

A.1 (continued)

be OPERABLE in this Condition. If one or both CRVS Booster Fans are simultaneously inoperable, the Completion Time for these separate Conditions is more limiting than the 30 day Completion Time for Action A.1. If OPERABLE the CRVS Booster Fan train(s) can provide some dose reduction. The 30 day Completion Time is based on the low probability of an accident occurring during the time period and the potential for OPERABLE CRVS Booster Fan trains to provide some dose reduction.

B.1

With one CRVS Booster Fan train inoperable for reasons other than Condition A, action must be taken to restore the train to OPERABLE status within 72 hours. In this Condition, the remaining OPERABLE CRVS Booster Fan train provides some dose reduction for personnel in the Control Room. The 72 hour Completion Time is based on the low probability of an accident occurring during this time period, and ability of the remaining train to provide some dose reduction.

A note is being added to allow for an additional 96 hours when entering this Condition for implementation of Control Room Intake/Booster Fan modification.

C.1

With the two CRVS Booster Fan trains inoperable for reasons other than Condition A, one train must be restored to OPERABLE status within 24 hours. In this Condition, the capability to minimize the radiation dose to personnel located in the Control Room during and after an accident is unavailable. The 24 hour Completion Time is based on the low probability of an accident occurring during this time period.

A note is being added to allow for an additional 48 hours when entering this Condition for implementation of Control Room Intake/Booster Fan modification.

D.1

If the inoperable CRVS Booster Fan trains cannot be restored to OPERABLE status within the required Completion Time, the unit must be placed in a MODE in which the LCO does not apply. To achieve this

BASES

ACTIONS

D.1 (continued)

status, the unit must be placed in at least MODE 3 within 12 hours, and in MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

E.1

During movement of recently irradiated fuel assemblies, when one or more CRVS trains are inoperable, action must be taken immediately to suspend activities that could release radioactivity that might require isolation of the control room. This places the unit in a condition that minimizes the accident risk. This does not preclude the movement of fuel to a safe position.

SURVEILLANCE REQUIREMENTS

SR 3.7.9.1

Standby systems should be checked periodically to ensure that they function properly. As the environment and normal operating conditions on this system are not severe, testing each train once every 92 days adequately checks this system. The trains need only be operated for ≥ one hour and all dampers verified to be OPERABLE to demonstrate the function of the system. This test includes an external visual inspection of the CRVS Booster Fan trains. The 92 day Frequency is based on the known reliability of the equipment.

SR 3.7.9.2

This SR verifies that the required CRVS Booster Fan train testing is performed in accordance with the Ventilation Filter Testing Program (VFTP). The CRVS Booster Fan train filter test frequencies are in accordance with Regulatory Guide 1.52 (Ref. 4). The VFTP includes testing HEPA filter performance and carbon adsorber efficiency. Specific test frequencies and additional information are discussed in detail in the VFTP.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.7.9.3

This SR verifies the integrity of the Control Room enclosure. The Control Room positive pressure, with respect to potentially contaminated adjacent areas, is periodically tested to verify that the CRVS Booster Fan trains are functioning properly. During the emergency mode of operation, the CRVS Booster Fan trains are designed to pressurize the Control Room to minimize unfiltered inleakage. The CRVS Booster Fan trains are designed to maintain this positive pressure with both trains in operation. The Frequency of 18 months is consistent with industry practice.

REFERENCES

1. UFSAR, Section 9.4.
2. UFSAR, Chapter 15.
3. 10 CFR 50.36.
4. Regulatory Guide 1.52, Rev. 2, March 1978.

B 3.7 PLANT SYSTEMS

B 3.7.10 Penetration Room Ventilation System (PRVS)

BASES

BACKGROUND

The PRVS filters air from the area of the active penetration rooms during the recirculation phase of a loss of coolant accident (LOCA).

The PRVS consists of two independent, redundant trains. Each train consists of a prefilter, a high efficiency particulate air (HEPA) filter, an activated carbon adsorber section for removal of gaseous activity (principally iodines), and a fan. Ductwork, valves or dampers, and instrumentation also form part of the system. The system initiates filtered ventilation of the Reactor Building penetration rooms area following receipt of an Engineered Safeguards actuation signal (ESAS).

The PRVS is a standby system. During emergency operations, the PRVS valves are realigned, and fans are started to begin filtration. Upon receipt of the ESAS signal(s), the stream of ventilation air discharges through the system filter trains. The prefilters remove any large particles in the air, and any entrained water droplets present, to prevent excessive loading of the HEPA filters and carbon adsorbers.

The PRVS is discussed in the UFSAR, Sections 6.5.1, 9.4.7, and 15.4.7 (Refs. 1, 2, and 3, respectively).

APPLICABLE SAFETY ANALYSES

Originally, the design basis of the PRVS was established by the Maximum Hypothetical Accident (MHA). In such a case, the system limits radioactive releases to within 10 CFR 100 (Ref. 7) requirements and personnel doses in the Control Room are maintained within the limits of 10 CFR 20 (Ref. 4). However, with the adoption of the alternate source term and the installation of various plant modifications, the PRVS is no longer credited in dose analysis calculations and is not required to meet 10 CFR 50.67 (Ref. 8) dose limits.

The PRVS also actuates following a large and small break LOCA, in those cases where the unit goes into the recirculation mode of long term cooling, and to cleanup releases of smaller leaks, such as from valve stem packing.

Following a LOCA, an ESAS starts the PRVS fans and opens the dampers located in the penetration room outlet ductwork.

The PRVS does not satisfy criterion 3 of 10 CFR 50.36 (Ref. 5). PRVS is retained in the Specification for ALARA purposes only.

BASES (continued)

LCO

Two independent and redundant trains of the PRVS are required to be OPERABLE to ensure that at least one is available, assuming that a single failure disables the other train coincident with loss of offsite power.

The PRVS is considered OPERABLE when the individual components necessary to maintain the penetration room filtration are OPERABLE in both trains.

A PRVS train is considered OPERABLE when its associated:

a. Fan is OPERABLE;

b. HEPA filter and carbon adsorber are not excessively restricting flow, and are capable of performing their filtration functions; and

c. Ductwork, valves, and dampers are OPERABLE, and air flow can be maintained.

In addition, the penetration room boundaries, including the integrity of the walls, floors, ceilings, ductwork, and access doors, must be maintained within the assumptions of the design analysis.

APPLICABILITY

In MODES 1, 2, 3, and 4, the PRVS is required to be OPERABLE consistent with the OPERABILITY requirements of the containment.

In MODES 5 and 6, the PRVS is not required to be OPERABLE since the containment is not required to be OPERABLE.

ACTIONS

A.1

With one PRVS train inoperable, action must be taken to restore the PRVS train to OPERABLE status within 90 days. This completion time is considered appropriate since the system is no longer credited in dose analysis calculations and is not required to maintain 10 CFR 50.67 (Ref. 8) dose limits.

The 90 day Completion Time is appropriate based on operating experience. The 90 day Completion Time is based on the low probability of an accident occurring during this time period.

BASES

ACTIONS (continued)

B.1

With two PRVS trains inoperable or the required Action and associated Completion Time for Condition A not met, a report must be submitted to the NRC within 30 days detailing how the system will be restored to OPERABLE status. The allowed Completion Time is reasonable, based on operating experience.

SURVEILLANCE REQUIREMENTS

SR 3.7.10.1

Standby systems should be checked periodically to ensure that they function properly. Since the environment and normal operating conditions on this system are not severe, testing each train every 6 months provides an adequate check on this system. The 6 month Frequency is based on known reliability of equipment.

SR 3.7.10.2

This SR verifies that the required PRVS testing is performed in accordance with the Ventilation Filter Testing Program (VFTP). The VFTP includes testing HEPA filter performance and carbon adsorber efficiency. Specific test frequencies and additional information are discussed in detail in the VFTP.

SR 3.7.10.3

This SR verifies that each PRVS train starts and operates on an actual or simulated actuation signal. The 18 month Frequency is consistent with the guidance in Reference 6.

SR 3.7.10.4

This SR verifies the ability of the PRVS to maintain flow ≥ 800 cfm and ≤ 1200 cfm. It is periodically tested to verify proper functioning of the PRVS. This ensures that air turnover and filtration of the area contents will be maintained for ALARA purposes.

BASES

SURVEILLANCE REQUIREMENTS	SR 3.7.10.4 (continued) The Frequency of 18 months on a STAGGERED TEST BASIS is consistent with industry practice and other filtration SRs.

REFERENCES	1.	UFSAR, Section 6.5.1.
	2.	UFSAR, Section 9.4.7.
	3.	UFSAR, Section 15.15.
	4.	10 CFR 20.
	5.	10 CFR 50.36.
	6.	Regulatory Guide 1.52.
	7.	10 CFR 100.
	8.	10 CFR 50.67.
	9.	Dose Calculations

BASES (continued)

LCO (continued)

inoperable for Unit 2. If both dampers close, an adequate flow path for OPERABILITY is maintained even if one of two motor operated dampers on Unit 2 fail closed. If the Unit 1 dampers fail closed, OPERABILITY is not affected for the AHU-35 failure scenario. OPERABILITY is not maintained if one or both of the fire dampers between cable rooms or equipment rooms is closed. Compensatory measures, such as opening the damper and posting a fire watch must be taken to maintain OPERABILITY.

The CRACS is considered OPERABLE when the individual components that are necessary to maintain control area temperature are OPERABLE in both trains of CRVS and WC System. Each CRVS train listed in Table B 3.7.16-1 includes the associated ductwork, instrumentation, and air handling unit, which includes the fan, fan motor, cooling coils, and isolation dampers. Each WC train consists of a chiller, chilled water pump, condenser service water pump, and associated controls. Although each chilled water pump is normally associated with, and aligned to, a specific chiller, any OPERABLE chilled water pump maybe aligned to any OPERABLE chiller to maintain one OPERABLE train when a component has been removed from service. The two redundant trains can include a temporarily installed full-capacity control area cooling train. Any temporary cooling train shall have a power source with availability equivalent to the source of the permanently installed train. A temporary cooling train power source with equivalent availability shall include procedural controls for:

1. Normal Auxiliary power (e.g. B4T-7) for normal operation.
2. Swapping to a Keowee backed power supply (e.g. 3TD-15) following a LOOP.

In addition, the CRACS must be OPERABLE to the extent that air circulation can be maintained.

APPLICABILITY

In MODES 1, 2, 3, 4, and during movement of recently irradiated fuel assemblies (i.e., fuel that has occupied part of a critical reactor core within the previous 72 hours), the CRACS must be OPERABLE to ensure that the control area temperature will not exceed equipment OPERABILITY requirements.

BASES

ACTIONS (continued)

D.1 and D.2

If the Required Actions and associated Completion Times of Conditions A, B, or C are not met in MODE 1, 2, 3, or 4, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 12 hours, and in MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner without challenging unit systems.

E.1 and E.2

During movement of recently irradiated fuel, if the inoperable CRACS train cannot be restored to OPERABLE status within the required Completion Time, the OPERABLE CRACS train must be placed in operation immediately. This action ensures that the remaining train is OPERABLE, that no failures preventing actuation will occur, and that any active failure will be readily detected. An alternative to Required Action E.1 is to immediately suspend activities that could release radioactivity that might require the isolation of the control room. This places the unit in a condition that minimizes accident risk. This does not preclude the movement of fuel to a safe position.

F.1

If both CRVS trains or both WC trains are inoperable during MODE 1, 2, 3 or 4, the CRACS may not be capable of performing the intended function and the unit is in a condition outside the accident analyses. Therefore, LCO 3.0.3 must be entered immediately.

G.1

During movement of recently irradiated fuel assemblies, with two CRACS trains inoperable, action must be taken to immediately suspend activities that could release radioactivity that might require isolation of the control room. This places the unit in a condition that minimizes accident risk. This does not preclude the movement of fuel to a safe position.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.7.16.1

This SR verifies that the heat removal capability of the system is sufficient to maintain the temperature in the control room and cable room at or below 80°F and maintain the temperature in the electrical equipment room at or below 85°F. The temperature is determined by reading gauges in each area or computer points which are considered representative of the average area temperature. These temperature limits are based on operating history and are intended to provide an indication of degradation of the cooling systems. The limits are conservative with respect to equipment operability temperature limits. The values for the SR are values at which the system is removing sufficient heat to meet design requirements (i.e., OPERABLE) and sufficiently above the values associated with normal operation during hot weather. The temperature in the equipment room is typically slightly higher than the temperature in the control room or cable room. Because of that, a higher value is specified for this area. The 12 hour Frequency is appropriate since significant degradation of the CRACS is slow and is not expected over this time period.

REFERENCES

1. UFSAR, Section 3.11.5.

2. UFSAR, Section 9.4.1.

B 3.7 PLANT SYSTEMS

B 3.7.17 Spent Fuel Pool Ventilation System (SFPVS)

BASES

BACKGROUND

Ventilation air for the Spent Fuel Pool Area is supplied by an air handling unit which consists of roughing filters, steam heating coil, cooling coil supplied by low pressure service water, and a centrifugal fan. In the normal mode of operation, the air from the Spent Fuel Pool Area is exhausted directly to the unit vents by the general Auxiliary Building exhaust fans. The filtered exhaust system consists of a single filter train and two 100 percent capacity vane axial fans. The filter train utilized is the Reactor Building Purge Filter Train. The Unit 2 Reactor Building purge filter train is used for the combined Unit 1 and 2 Spent Fuel Pool Ventilation System, The Unit 3 Reactor Building purge filter train is used for the Unit 3 SFP Ventilation System. The filter train is comprised of prefilters, HEPA filters, and charcoal filters. To control the direction of air flow, i.e., to direct the air from the Fuel Pool Area to the Reactor Building Purge Filter Train, a series of pneumatic motor operated dampers are provided along with a crossover duct from the Fuel Pool to the filter train.

The SFPVS is discussed in the UFSAR, Section 9.4.2, (Ref. 1).

APPLICABLE SAFETY ANALYSES

The analysis of the limiting fuel handling accident, the cask drop accident, given in Reference 2, assumes that a certain number of fuel assemblies are damaged. The DBA analysis for the cask drop accident, does not assume operation of the SFPVS in order to meet the requirements of 10CFR50.67 (Ref. 4). These assumptions and the analysis are consistent with the guidance provided in Regulatory Guide 1.183 (Ref. 3).

The SFPVS does not satisfy the criteria in 10 CFR 50.36. The SFPVS is retained in this Specification for ALARA purposes.

LCO

With the adoption of the alternate source term and the installation of various plant modifications, SFPVS is not credited in dose analysis calculations. Therefore, there are no specific operability requirements for this system.

BASES

LCO (continued)

An SFPVS train is considered OPERABLE when its associated:

1. Fan is OPERABLE;
2. Filter trains are intact; and
3. Ductwork and dampers are OPERABLE, and air flow can be maintained.

The LCO is modified by a Note. The Note states the requirements of this LCO is not applicable during reracking operations with no fuel in the spent fuel pool. With no fuel in the spent fuel pool, the potential release of radioactive material to the environs resulting from crane operations with load over the storage pool is substantially reduced.

APPLICABILITY

During movement of recently irradiated fuel in the fuel handling area or during crane operations with loads over the spent fuel pool, the SFPVS shall be OPERABLE or a plan established to return the system to OPERABLE status.

ACTIONS

A.1

With one SFPVS train inoperable, action must be taken to restore the SFPVS train to OPERABLE status within 90 days. This completion time is considered appropriate since the system is no longer credited in dose analysis calculations and is not required to maintain 10 CFR 50.67 (Ref. 4) dose limits.

BASES

ACTIONS (continued)

B.1

With two SFPVS trains inoperable or the Required Action and associated Completion Time for Condition A not being met, a report must be submitted to the NRC within 30 days outlining the plan for restoring the system to an OPERABLE status. This completion time is considered appropriate since the system is no longer credited in dose analysis calculations and is not required to maintain 10 CFR 50.67 (Ref. 4) dose limits.

SURVEILLANCE REQUIREMENTS

SR 3.7.17.1

Standby systems should be checked periodically to ensure that they function properly. As the environment and normal operating conditions on this system are not severe, testing each train once every six months provides an adequate check on this system. The system is no longer credited in dose analysis calculations and is not required to maintain 10 CFR 50.67 dose limits.

SR 3.7.17.2

This SR verifies that the required SFPVS testing is performed in accordance with the Ventilation Filter Testing Program (VFTP). The VFTP includes testing HEPA filter performance, charcoal adsorber efficiency, minimum system flow rate, and the physical properties of the activated charcoal (general use and following specific operations). Specific test frequencies and additional information are discussed in detail in the VFTP.

REFERENCES

1. UFSAR, Section 9.4.2.
2. UFSAR, Section 15.11.
3. Regulatory Guide 1.183.
4. 10 CFR 50.67
5. Dose Calculations

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.2 AC Sources – Shutdown

BASES

BACKGROUND

A description of the AC sources, except AC sources utilizing transformer CT-5, is provided in the Bases for LCO 3.8.1, "AC Sources – Operating." An additional source of AC power is available either directly from the 100 kV Central Tie Substation or from the combustion turbines at Lee Steam Station via a 100 kV transmission line connected to Transformer CT-5. This single 100 kV circuit is connected to the 100 kV transmission system through the substation at Central, located eight miles from Oconee. The Central Substation is connected to Lee Steam Station twenty-two miles away through a similar 100 kV line. This line can either be isolated from the balance of the transmission system to supply emergency power to Oconee from Lee Steam Station, or offsite power can be supplied directly from the 100 kV system from the Central Tie Substation. When CT-5 is energized from the 100 kV system, this is an acceptable offsite source for Oconee Units in MODES 5 and 6. When CT-5 is energized from an OPERABLE Lee Combustion Turbine (LCT) and isolated from the balance of the transmission system, this source is an acceptable emergency power source.

Located at Lee Steam Station are three 44.1 MVA combustion turbines. One of these three combustion turbines can be started in one hour and connected to the 100 kV line. Transformer CT-5 is sized to carry the engineered safeguards auxiliaries of one unit plus the shutdown loads of the other two units.

APPLICABLE SAFETY ANALYSES

The OPERABILITY of the minimum AC sources during MODES 5 and 6 and during movement of recently irradiated fuel assemblies ensures that:

a. The unit can be maintained in the shutdown or refueling condition for extended periods;

b. Sufficient instrumentation and control capability is available for monitoring and maintaining the unit status; and

c. Adequate AC electrical power is provided to mitigate events postulated during shutdown, such as a fuel handling accident involving handling recently irradiated fuel. Due to radioactive decay, AC electrical power is only required to mitigate fuel handling accidents involving handling recently irradiated fuel

BASES

APPLICABLE SAFETY ANALYSES (continued)

(i.e., fuel that has occupied part of a critical reactor core within the previous 72 hours).

In general, when the unit is shut down, the Technical Specifications requirements ensure that the unit has the capability to mitigate the consequences of postulated accidents. However, assuming a single failure and concurrent loss of all offsite or all onsite power is not required. The rationale for this is based on the fact that many accidents that are analyzed in MODES 1, 2, 3, and 4 have no specific analyses in MODES 5 and 6. Worst-case bounding events are deemed not credible in MODES 5 and 6 because the energy contained within the reactor pressure boundary, reactor coolant temperature and pressure, and the corresponding stresses result in the probabilities of occurrence being significantly reduced or eliminated, and in minimal consequences. These deviations from accident analysis assumptions and design requirements during shutdown conditions are allowed by the LCO for required systems.

During MODES 1, 2, 3, and 4 various deviations from the analysis assumptions and design requirements are allowed within the Required Actions. This allowance is in recognition that certain testing and maintenance activities must be conducted provided an acceptable level of risk is not exceeded. During MODES 5 and 6, performance of a significant number of required testing and maintenance activities is also required. In MODES 5 and 6, the activities are generally planned and administratively controlled. Relaxations from MODE 1, 2, 3, and 4 LCO requirements are acceptable during shutdown MODES based on:

a. The fact that time in an outage is limited. This is a risk prudent goal as well as a utility economic consideration;

b. Requiring appropriate compensatory measures for certain conditions. These may include administrative controls, reliance on systems that do not necessarily meet typical design requirements applied to systems credited in operating MODE analyses, or both;

c. Prudent utility consideration of the risk associated with multiple activities that could affect multiple systems; and

d. Maintaining, to the extent practical, the ability to perform required functions (even if not meeting MODE 1, 2, 3, and 4 OPERABILITY requirements) with systems assumed to function during an event.

BASES

APPLICABLE SAFETY ANALYSES (continued)

In the event of an accident during shutdown, this LCO ensures the capability to support systems necessary to avoid immediate difficulty, assuming either a loss of all offsite power or a loss of all onsite emergency power sources and their associated emergency power paths.

The AC sources satisfy Criterion 3 of the 10 CFR 50.36 (Ref. 1).

LCO

One offsite source capable of supplying the onsite power distribution system(s) of LCO 3.8.9, "Distribution Systems – Shutdown," ensures that all required loads are powered from offsite power. An OPERABLE emergency power source, associated with a distribution system required to be OPERABLE by LCO 3.8.9, ensures a diverse power source is available to provide electrical power support, assuming a loss of the offsite source. Together, OPERABILITY of the required offsite source and emergency power source ensure the availability of sufficient AC sources to operate the unit in a safe manner and to mitigate the consequences of postulated events during shutdown (e.g., fuel handling accidents involving handling recently irradiated fuel).

The qualified offsite source must be capable of maintaining rated frequency and voltage, and accepting required loads during an accident, while connected to the main feeder bus(es). Qualified offsite source are those that are described in the UFSAR and are part of the licensing basis for the unit.

An offsite source can be an offsite circuit available or connected through to the 230 kV switchyard to the startup transformer and to one main feeder bus. Additionally, the offsite source can be an offsite circuit available or connected though the 230 kV switchyard (525 kV switchyard for Unit 3) to a backcharged unit main step-up transformer and unit auxiliary transformer to one main feeder bus. Another alternative is the energized Central 100 kV switchyard available or connected through the 100 kV line and transformer CT-5 to one main feeder bus.

In MODES 5 or 6 and during movement of irradiated fuel, a Lee Combustion Turbine (LCT) energizing one standby bus via an isolated power path to one main feeder bus can be utilized as an emergency power source. The LCT is required to provide power within limits of voltage and frequency using the 100 kV transmission line electrically separated from the system grid and offsite loads energizing one or more standby buses through transformer CT-5. The required number of energized standby buses is based upon the requirements of LCO 3.8.9, "Distribution System – Shutdown."

BASES

LCO (continued)

An OPERABLE KHU must be capable of starting, accelerating to rated speed and voltage, and connecting to the main feeder bus(es). The sequence must be capable of being accomplished within 23 seconds after a manual emergency start initiation signal. An emergency power source must be capable of accepting required loads and must continue to operate until offsite power can be restored to the main feeder buses.

This LCO is modified by three Notes. Note 1 indicates that a unit startup transformer may be shared with a unit in MODES 5 and 6. Note 2 indicates that the requirements of Specification 5.5.19, "Lee Combustion Turbine Testing Program," shall be met when a Lee Combustion Turbine (LCT) is used for the emergency power requirements. Note 3 indicates that the required emergency power source and the required offsite power source shall not be susceptible to a failure disabling both sources.

The required emergency power source and required offsite source cannot be susceptible to a failure disabling both sources. If the required offsite source is the 230 kV switchyard and the startup transformer energizing the required main feeder bus(es), the KHU and its required underground emergency power path are required to be OPERABLE since it is not subject to a failure, such as an inoperable startup transformer, which simultaneously disables the offsite source. If the Central switchyard is serving as the required offsite source through the CT-5 transformer with a power path through only one standby bus, the KHU and its required underground emergency power path cannot be used as the emergency power source if the power path is through the same standby bus since a single failure of a standby bus would disable both sources. Conversely, if an LCT is being used as an emergency power source, the required offsite source must be an offsite circuit available or connected through the startup transformer or a backcharged unit main step-up transformer and the unit auxiliary transformer.

APPLICABILITY

The AC sources required to be OPERABLE in MODES 5 and 6 and during movement of recently irradiated fuel assemblies provide assurance that:

a. Systems to provide adequate coolant inventory makeup are available for the irradiated fuel assemblies;

b. Systems needed to mitigate a fuel handling accident involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous 72 hours) are available;

c. Systems necessary to mitigate the effects of events that can lead to core damage during shutdown are available; and

BASES

APPLICABILITY (continued)

d. Instrumentation and control capability is available for monitoring and maintaining the unit in a cold shutdown condition or refueling condition.

The AC power requirements for MODES 1, 2, 3, and 4 are covered in LCO 3.8.1.

ACTIONS

A.1

An offsite source would be considered inoperable if it were not available to one required main feeder bus. Although two main feeder buses may be required by LCO 3.8.9, the one main feeder bus with offsite power available may be capable of supporting sufficient required features to allow continuation of CORE ALTERATIONS and recently irradiated fuel movement. By the allowance of the option to declare features inoperable with no offsite power available, appropriate restrictions will be implemented in accordance with the affected required features LCO's ACTIONS.

A.2.1, A.2.2, A.2.3, A.2.4, B.1, B.2, B.3, and B.4

With the offsite source not available to all required features, the option would still exist to declare all required features inoperable. Since this option may involve undesired administrative efforts, the allowance for sufficiently conservative actions is made. With the required emergency power source inoperable, the minimum required diversity of AC power sources is not available. It is, therefore, required to suspend CORE ALTERATIONS, movement of recently irradiated fuel assemblies, and operations involving positive reactivity additions. The Required Action to suspend positive reactivity additions does not preclude actions to maintain or increase reactor vessel inventory provided the required SDM is maintained.

Suspension of these activities does not preclude completion of actions to establish a safe conservative condition. These actions minimize the probability or the occurrence of postulated events. It is further required to immediately initiate action to restore the required AC sources and to continue this action until restoration is accomplished in order to provide the necessary AC power to the unit safety systems.

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.4 DC Sources – Shutdown

BASES

BACKGROUND

A description of the 125 VDC Vital I&C sources is provided in the Bases for LCO 3.8.3, "DC Sources – Operating."

APPLICABLE SAFETY ANALYSES

The initial conditions of Accidents and transients analyses in the UFSAR, Chapter 6 (Ref. 1) and Chapter 15 (Ref. 2), assume that Engineered Safeguard (ES) systems are OPERABLE. The 125 VDC Vital I&C electrical power system provides normal and emergency DC electrical power for the emergency auxiliaries, and control and switching during all MODES of operation.

Although the 230 kV Switchyard 125 VDC Power System provides control power for circuit breaker operation in the 230 kV switchyard as well as DC power for degraded grid voltage protection circuits during all MODES of operation, no credit is taken for these functions in MODES 5 and 6.

The OPERABILITY of the 125 VDC Vital I&C sources is consistent with the initial assumptions of the accident analyses and the requirements for the supported systems' OPERABILITY.

The OPERABILITY of the minimum 125 VDC Vital I&C electrical power sources during MODES 5 and 6 and during movement of recently irradiated fuel assemblies ensures that:

a. The unit can be maintained in the shutdown or refueling condition for extended periods;

b. Sufficient instrumentation and control capability is available for monitoring and maintaining the unit status; and

c. Adequate DC electrical power is provided to mitigate events postulated during shutdown, such as a fuel handling accident involving handling recently irradiated fuel. Due to radioactive decay, DC electrical power is only required to mitigate fuel handling accidents involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous 72 hours).

BASES (continued)

APPLICABLE SAFETY ANALYSIS (continued)

The 125 VDC Vital I&C sources satisfy Criterion 3 of 10CFR 50.36 (Ref. 3).

LCO

The 125 VDC Vital I&C electrical power sources, each source consisting of one battery, one battery charger, and the corresponding control equipment and interconnecting cabling within the source, are required to be OPERABLE to support required distribution systems required OPERABLE by LCO 3.8.9, "Distribution Systems – Shutdown" and shall include at least one of the unit's 125 VDC Vital I&C power sources. This ensures the availability of sufficient 125 VDC Vital I&C electrical power sources to operate the unit in a safe manner and to mitigate the consequences of postulated events during shutdown (e.g., fuel handling accidents involving handling recently irradiated fuel).

APPLICABILITY

The 125 VDC Vital I&C electrical power sources required to be OPERABLE in MODES 5 and 6 and during movement of recently irradiated fuel assemblies, provide assurance that:

a. Required features to provide adequate coolant inventory makeup are available for the irradiated fuel assemblies in the core;

b. Required features needed to mitigate a fuel handling accident involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous 72 hours) are available;

c. Required features necessary to mitigate the effects of events that can lead to core damage during shutdown are available; and

d. Instrumentation and control capability is available for monitoring and maintaining the unit in a cold shutdown condition or refueling condition.

The 125 VDC Vital I&C electrical power requirements for MODES 1, 2, 3, and 4 are covered in LCO 3.8.3.

ACTIONS

A.1, A.2.1, A.2.2, A.2.3, and A.2.4

If two or more 125 VDC Vital I&C panelboards are required by LCO 3.8.9, the remaining 125 VDC Vital I&C panelboards with 125 VDC Vital I&C power available may be capable of supporting sufficient systems to allow

BASES

ACTIONS

A.1, A.2.1, A.2.2, A.2.3, and A.2.4 (continued)

continuation of CORE ALTERATIONS and fuel movement involving handling recently irradiated fuel. By allowing the option to declare required features inoperable with the associated 125 VDC Vital I&C power source(s) inoperable, appropriate restrictions will be implemented in accordance with the affected required features LCO ACTIONS. In many instances this option may involve undesired administrative efforts. Therefore, the allowance for sufficiently conservative actions is made (i.e., to suspend CORE ALTERATIONS, movement of recently irradiated fuel assemblies, and operations involving positive reactivity additions). The Required Action to suspend positive reactivity additions does not preclude actions to maintain or increase reactor vessel inventory, provided the required SDM is maintained.

Suspension of these activities shall not preclude completion of actions to establish a safe conservative condition. These actions minimize probability of the occurrence of postulated events. It is further required to immediately initiate action to restore the required 125 VDC Vital I&C electrical power sources and to continue this action until restoration is accomplished in order to provide the necessary 125 VDC Vital I&C electrical power to the unit safety systems.

The Completion Time of immediately is consistent with the required times for actions requiring prompt attention. The restoration of the required 125 VDC Vital I&C electrical power sources should be completed as quickly as possible in order to minimize the time during which the unit safety systems may be without sufficient power.

SURVEILLANCE REQUIREMENTS

SR 3.8.4.1

SR 3.8.4.1 requires performance of all Surveillances required by SR 3.8.3.1 through SR 3.8.3.6. Therefore, see the corresponding Bases for LCO 3.8.3 for a discussion of each SR.

This SR is modified by a Note. The reason for the Note is to preclude requiring the OPERABLE 125 VDC Vital I&C sources from being discharged below their capability to provide the required power supply or otherwise rendered inoperable during the performance of SRs. It is the intent that these SRs must still be capable of being met, but actual performance is not required.

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.7 Vital Inverters – Shutdown

BASES

BACKGROUND

A description of the inverters is provided in the Bases for LCO 3.8.6, "Inverters – Operating."

APPLICABLE SAFETY ANALYSES

The initial conditions of Accident and transient analyses in the UFSAR, Chapter 6 (Ref. 1) and Chapter 15 (Ref. 2), assume Engineered Safeguards systems are OPERABLE. The DC to AC inverters are designed to provide the required capacity, capability, redundancy, and reliability to ensure the availability of necessary power to the Reactor Protection System and Engineered Safeguards (ES) System instrumentation and controls so that the fuel, Reactor Coolant System, and containment design limits are not exceeded.

The OPERABILITY of the inverters is consistent with the initial assumptions of the accident analyses and the requirements for the supported systems' OPERABILITY.

The OPERABILITY of the minimum inverters to each 120 VAC Vital Instrumentation panelboards during MODES 5 and 6 ensures that:

a. The unit can be maintained in the shutdown or refueling condition for extended periods;

b. Sufficient instrumentation and control capability is available for monitoring and maintaining the unit status; and

c. Adequate power is available to mitigate events postulated during shutdown, such as a fuel handling accident involving handling recently irradiated fuel. Due to radioactive decay, the inverters are only required to mitigate fuel handling accidents involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous 72 hours).

The inverters were previously identified as part of the distribution system and, as such, satisfy Criterion 3 of 10 CFR 50.36 (Ref. 3).

BASES (continued)

LCO

The inverters ensure the availability of electrical power for the instrumentation for systems required to shut down the reactor and maintain it in a safe condition after a transient or accident. The battery powered inverters provide uninterruptible supply of AC electrical power to the 120 VAC Vital Instrumentation panelboards even if the 4.16 kV buses are de-energized. OPERABILITY of the inverters requires that the 120 VAC Vital Instrumentation panelboard be powered by the inverter. This ensures the availability of sufficient inverter power sources to operate the unit in a safe manner and to mitigate the consequences of postulated events during shutdown (e.g., fuel handling accidents).

APPLICABILITY

The inverters required to be OPERABLE in MODES 5 and 6, and during movement of recently irradiated fuel assemblies provide assurance that:

a. Systems to provide adequate coolant inventory makeup are available for the irradiated fuel in the core;

b. Systems needed to mitigate a fuel handling accident involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous 72 hours) are available;

c. Systems necessary to mitigate the effects of events that can lead to core damage during shutdown are available; and

d. Instrumentation and control capability is available for monitoring and maintaining the unit in a cold shutdown condition or refueling condition.

Inverter requirements for MODES 1, 2, 3, and 4 are covered in LCO 3.8.6.

ACTIONS

A.1, A.2.1, A.2.2, A.2.3, and A.2.4

If two or more 120 VAC Vital Instrumentation panelboards are required by LCO 3.8.9, "Distribution Systems – Shutdown," the remaining OPERABLE inverters may be capable of supporting sufficient required features to allow continuation of CORE ALTERATIONS, fuel movement involving handling recently irradiated fuel, and operations with a potential for positive reactivity additions. The Required Action to suspend positive reactivity additions does not preclude actions to maintain or increase reactor vessel inventory, provided the required SDM is maintained. By the allowance of the option to declare required features inoperable with

BASES

ACTIONS

A.1, A.2.1, A.2.2, A.2.3, and A.2.4 (continued)

the associated inverter(s) inoperable, appropriate restrictions will be implemented in accordance with the affected required features LCOs' Required Actions. In many instances, this option may involve undesired administrative efforts. Therefore, the allowance for sufficiently conservative actions is made (i.e., to suspend CORE ALTERATIONS, movement of recently irradiated fuel assemblies, and operations involving positive reactivity additions).

Suspension of these activities shall not preclude completion of actions to establish a safe conservative condition. These actions minimize the probability of the occurrence of postulated events. It is further required to immediately initiate action to restore the required inverters and to continue this action until restoration is accomplished in order to provide the necessary inverter power to the unit safety systems.

The Completion Time of immediately is consistent with the required times for actions requiring prompt attention. The restoration of the required inverters should be completed as quickly as possible in order to minimize the time the unit safety systems may be without power or powered from an alternate regulated voltage source.

SURVEILLANCE REQUIREMENTS

SR 3.8.7.1

This Surveillance verifies that the inverters are functioning properly with all required circuit breakers closed and 120 VAC Vital Instrumentation panelboards energized from the inverter. The verification of proper voltage and frequency output ensures that the required power is readily available for the instrumentation connected to the 120 VAC Vital Instrumentation panelboards. The 7 day Frequency takes into account the redundant capability of the inverters and other indications available in the control room that alert the operator to inverter malfunctions.

REFERENCES

1. UFSAR, Chapter 6.

2. UFSAR, Chapter 15.

3. 10 CFR 50.36.

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.9 Distribution Systems – Shutdown

BASES

BACKGROUND

A description of the AC, DC and AC vital electrical power distribution systems is provided in the Bases for LCO 3.8.8, "Distribution Systems – Operating."

APPLICABLE SAFETY ANALYSES

The initial conditions of accident and transient analyses in the UFSAR, Chapter 6 (Ref. 1) and Chapter 15 (Ref. 2), assume Engineered Safeguards (ES) systems are OPERABLE. The AC, DC, and AC vital electrical power distribution systems are designed to provide sufficient capacity, capability, redundancy, and reliability to ensure the availability of necessary power to ES systems so that the fuel, Reactor Coolant System, and containment design limits are not exceeded.

The OPERABILITY of the AC, DC, and AC vital electrical power distribution systems is consistent with the initial assumptions of the accident analyses and the requirements for the supported systems' OPERABILITY.

The OPERABILITY of the minimum AC, DC, and AC vital electrical power distribution systems during MODES 5 and 6, and during movement of recently irradiated fuel assemblies ensures that:

a. The unit can be maintained in the shutdown or refueling condition for extended periods;

b. Sufficient instrumentation and control capability is available for monitoring and maintaining the unit status; and

c. Adequate power is provided to mitigate events postulated during shutdown, such as a fuel handling accident involving handling recently irradiated fuel. Due to radioactive decay, AC, DC, and AC vital bus electrical power is only required to mitigate fuel handling accidents involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous 72 hours).

The AC and DC electrical power distribution systems satisfy Criterion 3 of 10 CFR 50.36 (Ref. 3).

BASES (continued)

LCO

Various combinations of portions of systems, equipment, and components are required OPERABLE by other LCOs, depending on the specific plant condition. Implicit in those requirements is the required OPERABILITY of necessary support required features. This LCO explicitly requires the portions of the electrical distribution system necessary to support OPERABILITY of required systems, equipment, and components – all specifically addressed in each LCO and implicitly required via the definition of OPERABILITY- be energized or available to be automatically energized by control logicduring a power source transfer.

Maintaining these portions of the distribution system as described above ensures the availability of sufficient power to operate the unit in a safe manner to mitigate the consequences of postulated events during shutdown (e.g., fuel handling accidents involving handling recently irradiated fuel).

APPLICABILITY

The AC and DC electrical power distribution buses, ES power strings and panelboards required to be OPERABLE in MODES 5 and 6, and during movement of recently irradiated fuel assemblies, provide assurance that:

a. Systems to provide adequate coolant inventory makeup are available for the irradiated fuel in the core;

b. Systems needed to mitigate a fuel handling accident accidents involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous 72 hours) are available;

c. Systems necessary to mitigate the effects of events that can lead to core damage during shutdown are available; and

d. Instrumentation and control capability is available for monitoring and maintaining the unit in a cold shutdown condition or refueling condition.

The AC, DC, and AC vital electrical power distribution buses, ES power strings and panelboards requirements for MODES 1, 2, 3, and 4 are covered in LCO 3.8.8.

BASES (continued)

ACTIONS

A.1, A.2.1, A.2.2, A.2.3, A.2.4, and A.2.5

Although redundant required equipment may require redundant buses, ES power strings and panelboards of electrical power distribution systems to be OPERABLE, a reduced set of OPERABLE distribution buses, ES power strings and panelboards may be capable of supporting sufficient required features to allow continuation of CORE ALTERATIONS and recently irradiated fuel movement. By allowing the option to declare required equipment associated with an inoperable distribution buses, ES power strings and panelboards inoperable, appropriate restrictions are implemented in accordance with the affected distribution buses, ES power strings and panelboards LCO's Required Actions. In many instances, this option may involve undesired administrative efforts. Therefore, the allowance for sufficiently conservative actions is made (i.e., to suspend CORE ALTERATIONS, movement of recently irradiated fuel assemblies, and operations involving positive reactivity additions).

Suspension of these activities does not preclude completion of actions to establish a safe conservative condition. These actions minimize the probability of the occurrence of postulated events. It is further required to immediately initiate action to restore the required AC and DC electrical power distribution buses, ES power strings and panelboards and to continue this action until restoration is accomplished in order to provide the necessary power to the unit safety systems.

Notwithstanding performance of the above conservative Required Actions, a required decay heat removal (DHR) subsystem may be inoperable. In this case, Required Actions A.2.1 through A.2.4 do not adequately address the concerns relating to coolant circulation and heat removal. Pursuant to LCO 3.0.6, the DHR ACTIONS would not be entered. Therefore, Required Action A.2.5 is provided to direct declaring DHR inoperable, which results in taking the appropriate DHR actions.

The Completion Time of immediately is consistent with the required times for actions requiring prompt attention. The restoration of the required distribution buses, ES power strings and panelboards should be completed as quickly as possible in order to minimize the time the unit safety systems may be without power.

B 3.9 REFUELING OPERATIONS

B 3.9.3 Containment Penetrations

BASES

BACKGROUND

During movement of recently irradiated fuel assemblies within containment, a release of fission product radioactivity within containment will be restricted from escaping to the environment when the LCO requirements are met. In MODES 1, 2, 3, and 4, this is accomplished by maintaining containment OPERABLE as described in LCO 3.6.1, "Containment." In MODE 6, the potential for containment pressurization as a result of an accident is not likely; therefore, requirements to isolate the containment from the outside atmosphere can be less stringent. In order to make this distinction, the penetration requirements are referred to as "containment closure" rather than "containment OPERABILITY." Containment closure means that specified escape paths are closed or capable of being closed. Since there is no significant potential for containment pressurization, the Appendix J leakage criteria and tests are not required.

The containment serves to contain fission product radioactivity that may be released from the reactor core following an accident, such that offsite radiation exposures are maintained within the requirements of 10 CFR 50.67. Additionally, the containment provides radiation shielding from the fission products that may be present in the containment atmosphere following accident conditions.

The containment equipment hatch, which is part of the containment pressure boundary, provides a means for moving large equipment and components into and out of containment. During movement of recently irradiated fuel assemblies within containment, the equipment hatch must be held in place by at least four bolts. Good engineering practice dictates that the bolts required by this LCO be approximately equally spaced.

The containment air locks, which are also part of the containment pressure boundary, provide a means for personnel access during MODES 1, 2, 3, and 4 unit operation in accordance with LCO 3.6.2, "Containment Air Locks." Each air lock has a door at both ends. The doors are normally interlocked to prevent simultaneous opening when containment OPERABILITY is required. During periods of unit shutdown

BASES

BACKGROUND (continued)

when containment OPERABILITY is not required, the door interlock mechanism may be disabled, allowing both doors of an air lock to remain open for extended periods when frequent containment ingress and egress is necessary. During movement of recently irradiated fuel assemblies within containment, containment closure is required; therefore, the door interlock mechanism may remain disabled, but one air lock door must always remain closed. Placement of a temporary cover plate in the emergency air lock is an acceptable means for providing containment closure.

The temporary cover plate is installed and sealed against the inner emergency air lock door flange gasket. The temporary cover plate is visually inspected to ensure that no gaps exist. All cables, hoses and service air piping run through the sleeves on the temporary cover plate will also be installed and sealed. The sleeves will also be inspected to ensure that no gaps exist. Leak testing is not required prior to beginning fuel handling operations. Therefore, visual inspection of the temporary cover plate over the emergency air lock satisfies the requirement that the air lock be closed, which constitutes operability for this requirement.

The requirements on containment penetration closure ensure that a release of fission product radioactivity within containment will be restricted from escaping to the environment. The closure restrictions are sufficient to restrict fission product radioactivity release from containment due to a fuel handling accident involving handling recently irradiated fuel during refueling.

The Reactor Building Purge System includes a supply penetration and exhaust penetration. During MODES 1, 2, 3, and 4, two valves in each of the supply and exhaust penetrations are secured in the closed position. The system is not subject to a Specification in MODE 5.

In MODE 6, large air exchanges are necessary to support refueling operations. The purge system is used for this purpose, and two valves in each penetration flow path may be closed on a unit vent high radiation signal.

Other containment penetrations that provide direct access from containment atmosphere to outside atmosphere must be isolated on at least one side. Isolation may be achieved by a closed automatic isolation valve, non-automatic power operated valve, manual isolation valve, blind flange, or equivalent. Equivalent isolation methods may include use of a material that can provide a temporary, atmospheric pressure ventilation barrier for the containment penetration(s) during fuel movements involving handling recently irradiated fuel.

BASES (continued)

APPLICABLE SAFETY ANALYSES

During movement of recently irradiated fuel assemblies within containment, the most severe radiological consequences result from a fuel handling accident involving handling recently irradiated fuel. The fuel handling accident is a postulated event that involves damage to irradiated fuel (Ref. 2). A minimum fuel transfer canal water level in conjunction with the minimum decay time of 72 hours prior to irradiated fuel movement with or without containment closure capability ensure that the release of fission product radioactivity subsequent to a fuel handling accident results in doses that are within the guideline values specified in 10 CFR 50.67. The design basis for fuel handling accidents has historically separated the radiological consequences from the containment capability. The NRC staff has treated the containment capability for fuel handling conditions as a logical part of the "primary success path" to mitigate fuel handling accidents, irrespective of the assumptions used to calculate the radiological consequences of such accidents (Ref. 2).

Containment penetrations satisfy Criterion 3 of 10 CFR 50.36.

LCO

This LCO reduces the consequences of a fuel handling accident involving handling recently irradiated fuel in containment by limiting the potential escape paths for fission product radioactivity from containment. The LCO requires any penetration providing direct access from the containment atmosphere to the outside atmosphere to be closed except for the OPERABLE containment purge and exhaust penetrations. For the OPERABLE containment purge and exhaust penetrations, this LCO ensures that these penetrations are isolable by the RB purge isolation signal.

This LCO is modified by a note indicating that an emergency air lock door is not required to be closed when a temporary cover plate is installed.

APPLICABILITY

The containment penetration requirements are applicable during movement of recently irradiated fuel assemblies within containment because this is when there is a potential for the limiting fuel handling accident. In MODES 1, 2, 3, and 4, containment penetration requirements are addressed by LCO 3.6.1. In MODES 5 and 6, when movement of irradiated fuel assemblies within containment is not being conducted, the potential for a fuel handling accident does not exist. Additionally, due to radioactive decay, a fuel handling accident involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous 72 hours) will result in doses that are well within the guideline values specified in 10 CFR 50.67 even

BASES (continued)

APPLICABILITY (continued)

without containment closure capability. Therefore, under these conditions no requirements are placed on containment penetration status.

ACTIONS

A.1

With the containment equipment hatch, air locks, or any containment penetration that provides direct access from the containment atmosphere to the outside atmosphere not in the required status, including the Containment Purge and Exhaust Isolation System not capable of automatic actuation when the purge and exhaust valves are open, the unit must be placed in a condition in which the isolation function is not needed. This is accomplished by immediately suspending movement of recently irradiated fuel assemblies within containment. Performance of these actions shall not preclude moving a component to a safe position.

SURVEILLANCE REQUIREMENTS

SR 3.9.3.1

This Surveillance demonstrates that each of the containment penetrations required to be in its closed position is in that position. Also the Surveillance will demonstrate that each open penetration's valve operator has motive power, which will ensure each valve is capable of being closed.

The Surveillance is performed every 7 days during the movement of recently irradiated fuel assemblies within the containment. The Surveillance interval is selected to be commensurate with the normal duration of time to complete fuel handling operations.

As such, this Surveillance ensures that a postulated fuel handling accident involving handling recently irradiated fuel that releases fission product radioactivity within the containment will not result in a release of significant fission product radioactivity to the environment.

SR 3.9.3.2

This Surveillance demonstrates that each containment purge supply and exhaust isolation valve that is not locked, sealed or otherwise secured in the isolation position actuates to its isolation position on an actual or simulated high radiation signal. The frequency requires the isolation capability of the reactor building purge valves to be verified functional once each refueling outage prior to movement of recently irradiated fuel assemblies within containment. This ensures that this function is

BASES

SURVEILLANCE REQUIREMENTS	SR 3.9.3.2 (continued) verified prior to movement of recently irradiated fuel assemblies within containment. This Surveillance will ensure that the valves are capable of closing after a postulated fuel handling accident involving handling recently irradiated fuel to limit a release of fission product radioactivity from the containment.
REFERENCES	1. UFSAR, Section 15.11. 2. NRC letter to RG & E dated December 7, 1995, R.E. Ginna Nuclear Power Plant Conversion to Improved Standard Technical Specifications - Resolutions of Ginna Design Basis for Refueling Accidents. 3. Regulatory Guide 1.183, July 2000

B 3.9 REFUELING OPERATIONS

B 3.9.6 Fuel Transfer Canal Water Level

BASES

BACKGROUND

The movement of irradiated fuel assemblies within containment requires a minimum water level of 21.34 ft above the top of the reactor vessel flange. During refueling, this maintains sufficient water level in the fuel transfer canal, and the spent fuel pool. Sufficient water is necessary to retain iodine fission product activity in the water in the event of a fuel handling accident (Refs. 1 and 2). Sufficient iodine activity would be retained to limit offsite doses from the accident within 10 CFR 50.67 limits, as provided by the guidance of Reference 3.

APPLICABLE SAFETY ANALYSES

During movement of irradiated fuel assemblies, the water level in the fuel transfer canal is an initial condition design parameter in the analysis of the fuel handling accident in containment postulated by Regulatory Guide 1.183 (Ref. 1). Regulatory Guide 1.183, Appendix B provides guidance for evaluating the radiological consequences of a fuel handling accident in containment and the spent fuel pool building. The methodology stipulates that a minimum water level of 23 ft has been demonstrated to provide decontamination factors (DF) for the elemental and organic species are 500 and 1, respectively, giving an overall effective decontamination factor of 200 (i.e., 99.5% of the total iodine released from the damaged rods is retained by the water). This difference in decontamination factors for elemental (99.85%) and organic iodine (0.15%) species results in the iodine above the water being composed of 57% elemental and 43% organic species. If the depth of the water is different from 23 feet, the decontamination factor should be developed (Ref. 1)."

The fuel handling accident analysis inside containment is described in Reference 2. Since the minimum water level of 21.34 feet is less than 23 feet, the DF must be determined through calculations with comparable conservatism. An experimental test program described in WCAP-7828 (Ref. 4) evaluated the extent of removal of iodine released from a damaged irradiated fuel assembly. Using the analytical results from the test program described in WCAP-7828, with a water depth of 21.34 feet, a comparable overall effective DF of 183 was determined. With a minimum water level of 21.34 ft, and a minimum decay time of 72 hours prior to fuel handling, the analysis and test programs demonstrate that the iodine release due to a postulated fuel handling

BASES (continued)

APPLICABLE SAFETY ANALYSES (continued)	accident is adequately captured by the water, and offsite doses are maintained within allowable limits (Ref. 3). Fuel Transfer Canal water level satisfies Criterion 2 of 10 CFR 50.36
LCO	A minimum fuel transfer canal water level of 21.34 ft above the reactor vessel flange is required to ensure that the radiological consequences of a postulated fuel handling accident inside containment are within acceptable limits as provided by 10 CFR 50.67.
APPLICABILITY	LCO 3.9.6 is applicable when moving irradiated fuel assemblies within the containment. The LCO minimizes the possibility of a fuel handling accident in containment that is beyond the assumptions of the safety analysis. If irradiated fuel is not present in containment, there can be no significant radioactivity release as a result of a postulated fuel handling accident. Requirements for fuel handling accidents in the spent fuel pool are covered by LCO 3.7.11, "Fuel Storage Pool Water Level."
ACTIONS	A.1 With a water level of < 21.34 ft above the top of the reactor vessel flange, all operations involving movement of irradiated fuel assemblies shall be suspended immediately to ensure that a fuel handling accident cannot occur. The suspension of fuel movement shall not preclude completion of movement of a component to a safe position.
SURVEILLANCE REQUIREMENTS	SR 3.9.6.1 Verification of a minimum water level of 21.34 ft above the top of the reactor vessel flange ensures that the design basis for the postulated fuel handling accident analysis during refueling operations is met. Water at the required level above the top of the reactor vessel flange limits the consequences of damaged fuel rods that are postulated to result from a postulated fuel handling accident inside containment (Ref. 2). The Frequency of 24 hours is based on engineering judgment and is considered adequate in view of the large volume of water and the normal procedural controls of valve positions, which make significant unplanned level changes unlikely.

BASES (continued)

REFERENCES

1. Regulatory Guide 1.183, July 2000.
2. UFSAR Section 15.11.2.2.
3. 10 CFR 50.67.
4. WCAP-7828, December 1971

ATTACHMENT 2

Duke Energy Corporation
Mark-up of Technical Specifications

3.3 INSTRUMENTATION

3.3.16 Reactor Building (RB) Purge Isolation – High Radiation

LCO 3.3.16 One channel of Reactor Building Purge Isolation – High Radiation shall be OPERABLE.

APPLICABILITY: ~~During CORE ALTERATIONS,~~
During movement of recently irradiated fuel assemblies within the containment.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One channel inoperable.	A.1 Place and maintain RB purge valves in closed position~~s~~.	Immediately
	OR	
	~~A.2.1 Suspend CORE ALTERATIONS.~~	~~Immediately~~
	~~AND~~	
	A.2~~.2~~ Suspend movement of recently irradiated fuel assemblie~~s within~~ the containment.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.16.1	Perform CHANNEL CHECK.	12 hours
SR 3.3.16.2	Perform CHANNEL FUNCTIONAL TEST.	Once each refueling outage prior to ~~CORE ALTERATIONS or~~ movement of recently irradiated fuel assemblies within containment
SR 3.3.16.3	Perform CHANNEL CALIBRATION.	18 months

3.7 PLANT SYSTEMS

3.7.9 Control Room Ventilation System (CRVS) Booster Fans

LCO 3.7.9 Two CRVS Booster Fan trains shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4,
During movement of recently irradiated fuel assemblies.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Control Room pressure ≤ 0.0 psig during operation of two CRVS Booster Fan trains.	A.1 Restore Control Room pressure to > 0.0 psig during operation of two CRVS Booster Fan trains.	30 days
B. One CRVS Booster Fan train inoperable for reasons other than Condition A.	B.1 Restore CRVS Booster Fan train to OPERABLE status.	72 hours Add: ----- NOTE ----- An additional 96 hours is allowed when entering this condition for implementation of Control Room intake/booster fan modification. ----------
C. Two CRVS Booster Fan trains inoperable for reasons other than Condition A.	C.1 Restore one CRVS Booster Fan train to OPERABLE status.	24 hours Add: ----- NOTE ----- An additional 48 hours is allowed when entering this condition for implementation of Control Room intake/booster fan modification. ----------
D. Required Action and associated Completion Time not met. in MODE 1, 2, 3, or 4.	D.1 Be in MODE 3. AND D.2 Be in MODE 5	12 hours 36 hours
E. Required Action and associated Completion Time not met during movement of recently irradiated fuel assemblies.	E.1 Suspend movement of recently irradiated fuel assemblies.	Immediately

3.7 PLANT SYSTEMS

3.7.10 Penetration Room Ventilation System (PRVS)

LCO 3.7.10 Two PRVS trains shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One PRVS train inoperable.	A.1 Restore PRVS train to OPERABLE status.	90 ~~7~~ days
B. Two PRVS trains inoperable OR Required Action and associated Completion Time for Condition A not met.	B.1 Submit a written report to the NRC outlining the plan for restoring the system to OPERABLE status. ~~Be in MODE 3.~~ ~~AND~~ ~~B.2 Be in MODE 5.~~	~~12 hours~~ 30 days ~~36 hours~~

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.10.1	Operate each PRVS train for ≥ 15 minutes.	6 months ~~31 days~~
SR 3.7.10.2	Perform required PRVS filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.7.10.3	Verify each PRVS train actuates on an actual or simulated actuation signal.	18 months
SR 3.7.10.4	Verify one PRVS train ~~can~~ maintain ~~a~~ flow ~~negative pressure ≥ 0.06 inches water gauge relative to atmospheric pressure during operation at a flow rate of ≥ 900 cfm and ≤ 1100 cfm.~~ ≥ 800 cfm and ≤ 1200 cfm.	18 months on a STAGGERED TEST BASIS
~~SR 3.7.10.5~~	~~Verify the PRVS filter cooling bypass valve can be opened.~~	~~18 months~~

3.7 PLANT SYSTEMS

3.7.16 Control Room Area Cooling Systems (CRACS)

LCO 3.7.16 Two CRACS trains shall be OPERABLE as follows:

a. Two trains of the Control Room Ventilation System (CRVS) shall be OPERABLE, and

b. Two trains of the Chilled Water (WC) System shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4,
During movement of recently irradiated fuel assemblies.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One CRVS train inoperable.	A.1 Restore CRVS train to OPERABLE status.	30 days
B. One WC train inoperable.	B.1 Restore WC train to OPERABLE status.	30 days
C. Control Room area air temperature not within limit.	----------NOTE---------- LCO 3.0.4 is not applicable. ------------------------------	
	C.1 Restore Control Room area air temperature within limit.	7 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
~~D.~~ Required Action and associated Completion Time not met. in MODE 1, 2, 3, or 4.	D.1	Be in MODE 3.	12 hours
	AND		
	D.2	Be in MODE 5.	36 hours
F ~~E.~~ Two CRVS trains inoperable. during MODE 1, 2, 3 or 4. OR Two WC Trains inoperable. during MODE 1, 2, 3, or 4.	F ~~E.~~1	Enter LCO 3.0.3	Immediately
E. Required Action and associated Completion Time not met during movement of recently irradiated fuel assemblies	E.1	Place OPERABLE CRACS train in Operation	Immediately
	or		
	E.2	Suspend movement of recently irradiated fuel assemblies.	Immediately
G. Two CRACS Trains inoperable during movement of recently irradiated fuel assemblies	G.1	Suspend movement of recently irradiated fuel assemblies	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.16.1	Verify temperature in Control Room and Cable Room is ≤ 80°F and temperature in Electrical Equipment Room is ≤ 85°F.	12 hours

3.7 PLANT SYSTEMS

3.7.17 Spent Fuel Pool Ventilation System (SFPVS)

LCO 3.7.17 Two SFPVS trains shall be OPERABLE.

-----------------------------------NOTES-----------------------------------

~~1. LCO 3.0.3 is not applicable.~~

~~2~~ 1. Not applicable during reracking operations with no fuel in the spent fuel pool.

APPLICABILITY: During movement of recently irradiated fuel in the spent fuel pool.
During crane operations with loads over the spent fuel pool.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One SFPVS train inoperable.	A.1 Restore ~~Place OPERABLE~~ SFPVS train ~~in~~ to an ~~operation.~~ OPERABLE status	90 days ~~Immediately~~
	~~OR~~	
	~~A.2.1 Suspend movement of recently irradiated fuel in the spent fuel pool.~~	~~Immediately~~
	~~AND~~	
	~~A.2.2 Suspend crane operations with loads over the spent fuel pool.~~	~~Immediately~~

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. ~~Two SFPVS trains inoperable.~~ Two SFPVS trains inoperable OR Required action and associated Completion Time for Condition not met.	B.1~~.1~~ ~~Suspend movement of fuel in the spent fuel pool.~~ Submit a written report to the NRC outlining the plans for restoring the system to an OPERABLE status. ~~AND~~	~~Immediately~~ 30 days
	~~B.1.2 Suspend crane operations with loads over the spent fuel pool.~~	~~Immediately~~

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.17.1	Operate each SFPVS train for ≥ 15 minutes.	~~31 days~~ 6 months
SR 3.7.17.2	Perform required SFPVS filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP

APPLICABILITY: MODES 5 and ~~6~~,
During movement of recently irradiated fuel assemblies.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One required offsite source inoperable.	----------------NOTE---------------- Enter applicable Conditions and Required Actions of LCO 3.8.9, with required equipment de-energized as a result of Condition A. --		
	A.1	Declare affected required feature(s) with no offsite power available inoperable.	Immediately
	OR		
	A.2.1	Suspend CORE ALTERATIONS.	Immediately
	AND		
	A.2.2	Suspend movement of recently irradiated fuel assemblies.	Immediately
	AND		
	A.2.3	Initiate action to suspend operations involving positive reactivity additions.	Immediately
	AND		
	A.2.4	Initiate action to restore required offsite power source to OPERABLE status.	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One required emergency power source inoperable.	B.1 Suspend CORE ALTERATIONS.	Immediately
	AND	
	B.2 Suspend movement of irradiated fuel assemblies.	Immediately
	AND	
	B.3 Initiate action to suspend operations involving positive reactivity additions.	Immediately
	AND	
	B.4 Initiate action to restore required emergency power source to OPERABLE status.	Immediately

3.8 ELECTRICAL POWER SYSTEMS

3.8.4 DC Sources – Shutdown

LCO 3.8.4 125 VDC Vital I&C power source(s) shall be OPERABLE to support the 125 VDC Vital I&C power panelboard(s) required by LCO 3.8.9,"Distribution Systems – Shutdown" and shall include at least one of the unit's 125 VDC Vital I&C power sources.

APPLICABILITY: MODES 5 and 6,
During movement of recently irradiated fuel assemblies.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required 125 VDC Vital I&C power sources inoperable.	A.1 Declare affected required feature(s) inoperable.	Immediately
	<u>OR</u>	
	A.2.1 Suspend CORE ALTERATIONS.	Immediately
	<u>AND</u>	
	A.2.2 Suspend movement of recently irradiated fuel assemblies.	Immediately
	<u>AND</u>	
	A.2.3 Initiate action to suspend operations involving positive reactivity additions.	Immediately
	<u>AND</u>	
		(continued)

3.8 ELECTRICAL POWER SYSTEMS

3.8.7 Vital Inverters – Shutdown

LCO 3.8.7 Vital Inverters shall be OPERABLE to support the onsite 120 VAC Vital Instrumentation power panelboard(s) required by LCO 3.8.9, "Distribution Systems – Shutdown."

APPLICABILITY: MODES 5 and 6,
During movement of recently irradiated fuel assemblies.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required vital inverters inoperable.	A.1 Declare affected required equipment inoperable.	Immediately
	OR	
	A.2.1 Suspend CORE ALTERATIONS.	Immediately
	AND	
	A.2.2 Suspend movement of recently irradiated fuel assemblies.	Immediately
	AND	
	A.2.3 Initiate action to suspend operations involving positive reactivity additions.	Immediately
	AND	
	A.2.4 Initiate action to restore required inverters to OPERABLE status.	Immediately

3.8 ELECTRICAL POWER SYSTEMS

3.8.9 Distribution Systems – Shutdown

LCO 3.8.9 The necessary portion of main feeder buses, ES power strings, 125 VDC Vital I&C power panelboards, 230 kV Switchyard 125 VDC power panelboards and 120 VAC Vital Instrumentation power panelboards shall be OPERABLE to support equipment required to be OPERABLE.

APPLICABILITY: MODES 5 and 6,
During movement of irradiated fuel assemblies.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required main feeder buses, ES power strings, 125 VDC Vital I&C power panelboards, 230 kV Switchyard 125 VDC power panelboards or 120 VAC Vital Instrumentation power panelboards inoperable.	A.1 Declare associated supported required equipment inoperable.	Immediately
	<u>OR</u>	
	A.2.1 Suspend CORE ALTERATIONS.	Immediately
	<u>AND</u>	
	A.2.2 Suspend movement of irradiated fuel assemblies.	Immediately
	<u>AND</u>	
	A.2.3 Initiate action to suspend operations involving positive reactivity additions.	Immediately
	<u>AND</u>	
		(continued)

3.9 REFUELING OPERATIONS

3.9.3 Containment Penetrations

LCO 3.9.3 The containment penetrations shall be in the following status:

a. The equipment hatch closed and held in place by a minimum of four bolts;

b. One door in each air lock closed; and

-----NOTE-----
An emergency air lock door is not required to be closed when a temporary cover plate is installed.

---

c. Each penetration providing direct access from the containment atmosphere to the outside atmosphere either:

1. closed by a manual, non-automatic power operated or automatic isolation valve, blind flange, or equivalent, or
2. capable of being closed by an OPERABLE Reactor Building Purge supply and exhaust isolation signal.

APPLICABILITY: ~~During CORE ALTERATIONS,~~
During movement of recently irradiated fuel assemblies within containment.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more containment penetrations not in required status.	~~A.1 Suspend CORE ALTERATIONS~~ ~~AND~~ A.~~2~~1 Suspend movement of recently irradiated fuel assemblies within containment.	~~Immediately~~ Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.3.1	Verify each required containment penetration is in the required status.	7 days
SR 3.9.3.2	Verify each required Reactor Building Purge supply and exhaust isolation valve that is not locked, sealed or otherwise secured in the isolation position actuates to the isolation position on an actual or simulated high radiation actuation signal.	Once each refueling outage prior to ~~CORE ALTERATIONS or~~ movement of recently irradiated fuel assemblies within containment

3.9 REFUELING OPERATIONS

3.9.6 Fuel Transfer Canal Water Level

LCO 3.9.6 Fuel transfer canal water level shall be maintained ≥ 21.34 ft above the top of the reactor vessel flange.

APPLICABILITY: ~~During CORE ALTERATIONS, except during latching and unlatching of CONTROL ROD drive shafts,~~
During movement of irradiated fuel assemblies within containment.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Fuel transfer canal water level not within limit.	~~A.1 Suspend CORE ALTERATIONS.~~ ~~AND~~ A.~~2~~1 Suspend movement of irradiated fuel assemblies within containment.	~~Immediately~~ Immediately

5.5 Programs and Manuals

5.5.2 Containment Leakage Rate Testing Program (continued)

This program shall be in accordance with the guidelines contained in Regulatory Guide 1.163, "Performance-Based Containment Leak-Test Program," dated September 1995. Containment system visual examinations required by Regulatory Guide 1.163, Regulatory Position C.3 shall be performed as follows:

1. Accessible concrete surfaces and post-tensioning system component surfaces of the concrete containment shall be visually examined prior to initiating SR 3.6.1.1 Type A test. These visual examinations, or any portion thereof, shall be performed no earlier than 90 days prior to the start of refueling outages in which Type A tests will be performed. The validity of these visual examinations will be evaluated should any event or condition capable of affecting the integrity of the containment system occur between the completion of the visual examinations and the Type A test.

2. Accessible interior and exterior surfaces of metallic pressure retaining components of the containment system shall be visually examined at least three times every ten years, including during each shutdown for SR 3.6.1.1 Type A test, prior to initiating the Type A test.

Type B and C testing shall be implemented in the program in accordance with the requirements of 10 CFR 50, Appendix J, Option A.

The peak calculated containment internal pressure for the design basis loss of coolant accident, P_a, is 59 psig.

The maximum allowable containment leakage rate, L_a, at P_a, shall be 0.25% of the containment air weight per day.

Leakage rate acceptance criteria are:

a. Containment leakage rate acceptance criterion is $\leq 1.0\ L_a$. During the first unit startup following testing in accordance with this program, the leakage rate acceptance criteria are $\leq 0.60\ L_a$ for the Type B and Type C tests, and $\leq 0.75\ L_a$ for Type A tests;

~~b. Leakage > 0.50 L_a shall be to the penetration room.~~

The provisions of SR 3.0.3 are applicable to the Containment Leakage Rate Testing Program.

5.5 Programs and Manuals (continued)

5.5.11 Secondary Water Chemistry

This program provides controls for monitoring secondary water chemistry to inhibit SG tube degradation. The program shall include:

a. Identification of a sampling schedule for the critical variables and control points for these variables;

b. Identification of the procedures used to measure the values of the critical variables;

c. Identification of process sampling points;

d. Procedures for the recording and management of data;

e. Procedures defining corrective actions for all off control point chemistry conditions; and

f. A procedure identifying the authority responsible for the interpretation of the data and the sequence and timing of administrative events, which is required to initiate corrective action.

5.5.12 Ventilation Filter Testing Program (VFTP)

A program shall be established to implement the following required testing of filter ventilation systems at the frequencies specified in Regulatory Guide 1.52, Revision 2.

The VFTP is applicable to the Penetration Room Ventilation System (PRVS), the Control Room Ventilation System (CRVS) Booster Fan Trains, and the Spent Fuel Pool Ventilation System (SFPVS).

a. Demonstrate, for the PRVS, that a dioctyl phthalate (DOP) test of the high efficiency particulate air (HEPA) filters shows ≥ 99% removal when tested in accordance with ANSI N510-1975 at the system design flow rate ± 10%.

b. Demonstrate, for the CRVS Booster Fan Trains, that a DOP test of the HEPA filters shows ≥ 99.5% removal when tested at in accordance with ANSI N510-1975 at the system design flow rate ± 10%.

c. Demonstrate, for the PRVS, that a halogenated hydrocarbon test of the carbon adsorber shows ≥ 99% removal when tested in accordance with ANSI N510-1975 at the system design flow rate ± 10%.

5.5 Programs and Manuals

5.5.12 Ventilation Filter Testing Program (VFTP) (continued)

d. Demonstrate, for the CRVS Booster Fan Trains, that a halogenated hydrocarbon test of the carbon adsorber shows ≥ 99% removal when tested at in accordance with ANSI N510-1975 at the system design flow rate ± 10%.

e. Demonstrate, for the CRVS ~~Booster Fan~~ Trains, PRVS and SFPVS, that a laboratory test of a sample of the carbon adsorber shows ≥ 99%, 90%, 90% radioactive methyl iodide removal when tested ~~in accordance~~ with ASTM D3803-1989 (30°C, 95% RH), respectively.

f. Demonstrate~~, for the PRVS, that the pressure drop~~ across the combined ~~HEPA filters~~ and carbon adsorber banks is < 6 in. of water at the nominal system ~~design~~ flow rate ~~± 10%~~.

g. Demonstrate, for the CRVS Booster Fan Trains, that the pressure drop across the pre-filter is ≤ 1 in. of water and the pressure drop across the HEPA filters is ≤ 2 in. of water at the system design flow rate ± 10%.

h. Demonstrate, for the SFPVS, that a dioctyl phthalate (DOP) test of the high efficiency particulate air (HEPA) filters shows ≥ 99% removal when tested in accordance with ANSI N510-1975 at the ~~system~~ design flow rate ± 10%.

i. Demonstrate, for the SFPVS, that a halogenated hydrocarbon test of the carbon adsorber shows ≥ 99% removal when tested in accordance with ANSI N510-1975 at ~~the system~~ design flow rate ± 10%.

The provisions of SR 3.0.2 and SR 3.0.3 are applicable to the VFTP test frequencies.

5.5.13 Explosive Gas and Storage Tank Radioactivity Monitoring Program

This program provides controls for potentially explosive gas mixtures contained in the waste gas holdup tanks and the quantity of radioactivity contained in waste gas holdup tanks, and the quantity of radioactivity contained in unprotected outdoor liquid storage tanks. The gaseous radioactivity quantities shall be determined. The liquid radwaste quantities shall be determined by analyzing a representative sample of the tank's contents at least once per 7 days when radioactive materials are being added to the tank.

5.6 Reporting Requirements (continued)

5.6.5 CORE OPERATING LIMITS REPORT (COLR) (continued)

(7) DPC-NE-3000-P-A, Thermal Hydraulic Transient Analysis Methodology;

(8) DPC-NE-2005-P-A, Thermal Hydraulic Statistical Core Design Methodology;

(9) DPC-NE-3005-P-A, UFSAR Chapter 15 Transient Analysis Methodology; and

(10) BAW-10227-P-A, Evaluation of Advanced Cladding and Structural Material (M5) in PWR Reactor Fuel.

The COLR will contain the complete identification for each of the Technical Specifications referenced topical reports used to prepare the COLR (i.e., report number, title, revision number, report date or NRC SER date, and any supplements).

c. The core operating limits shall be determined such that all applicable limits (e.g., fuel thermal mechanical limits, core thermal hydraulic limits, Emergency Core Cooling System (ECCS) limits, nuclear limits such as SDM, transient analysis limits, and accident analysis limits) of the safety analysis are met.

d. The COLR, including any midcycle revisions or supplements, shall be provided upon issuance for each reload cycle to the NRC.

5.6.6 ~~Post Accident Monitoring (PAM) and Main Feeder Bus Monitor Panel (MFBMP) Report~~ Control Room Ventilation System (CRVS) Booster Fan, Penetration Room Ventilation System (PRVS), and Spent Fuel Pool Ventilation System (SFPVS)

Insert attached 5.6.6

~~When a report is required by Condition B or G of LCO 3.3.8, "Post Accident Monitoring (PAM) Instrumentation" or Condition D of LCO 3.3.23, "Main Feeder Bus Monitor Panel," a report shall be submitted within the following 14 days. The report shall outline the preplanned alternate method of monitoring (PAM only), the cause of the inoperability, and the plans and schedule for restoring the instrumentation channels of the Function to OPERABLE status.~~

5.6.7 Tendon Surveillance Report

Any abnormal degradation of the containment structure detected during the tests required by the Pre-stressed Concrete Containment Tendon Surveillance Program shall be reported to the NRC within 30 days. The report shall include a description of the tendon condition, the condition of the concrete (especially at tendon anchorages), the inspection procedures, the tolerances on cracking, and the corrective action taken.

Replace 5.6.6 with the following:

5.6.6 <u>Post Accident Monitoring (PAM), Main Feeder Bus Monitor Panel (MFPMP), Penetration Room Ventilation System (PRVS), and Spent Fuel Pool Ventilation System (SFPVS) Report</u>

When a report is required by Condition B or G of LCO 3.3.8, "Post Accident Monitoring (PAM) Instrumentation" or Condition D of LCO 3.3.23, "Main Feeder Bus Monitor Panel," a report shall be submitted within the following 14 days. The report shall outline the preplanned alternate method of monitoring (PAM only), the cause of the inoperability, and the plans and schedule for restoring the instrumentation channels of the Function to OPERABLE status.

When a report is required by Condition B of LCO 3.7.10, "Penetration Room Ventilation System," or Condition B of LCO 3.7.17, "Spent Fuel Pool Ventilation System," a report shall be submitted within the following 30 outlining the plan for restoring the system to OPERABLE status.

B 3.3 INSTRUMENTATION

B 3.3.16 Reactor Building (RB) Purge Isolation–High Radiation

BASES

BACKGROUND

The RB Purge Isolation–High Radiation Function closes the RB purge valves. This action isolates the RB atmosphere from the environment to minimize releases of radioactivity in the event an accident occurs.

The radiation monitoring system measures the activity in a representative sample of air drawn in succession through a particulate sampler, an iodine sampler, and a gas sampler. The LCO addresses only the gas sampler portion of this system (RIA-45).

The trip setpoint is chosen sufficiently below hazardous radiation levels to ensure that the consequences of an accident will be acceptable, provided the unit is operated within the LCOs at the onset of an accident or transient and the equipment functions as designed.

The closure of the purge valves ensures the RB remains as a barrier to fission product release. There is no bypass for this function.

APPLICABLE SAFETY ANALYSES

During movement of irradiated fuel assemblies within containment, the most severe radiological consequences result from a fuel handling accident. The fuel handling accident is a postulated event that involves damage to irradiated fuel (Ref. 1). A minimum fuel transfer canal water level and the minimum decay time of 72 hours prior to movement of irradiated fuel assemblies from the reactor ensure that the release of fission product radioactivity subsequent to a fuel handling accident results in doses that are within the guideline values specified in 10 CFR 100. The design basis for fuel handling accidents has historically separated the radiological consequences from the containment capability. The NRC staff has treated the containment capability for fuel handling conditions as a logical part of the "primary success path" to mitigate fuel handling accidents, regardless of the assumptions used to calculate the radiological consequences of such accidents (Ref. 1).

The RB Purge Isolation System satisfies Criterion 3 of 10 CFR 50.36 (Ref. 2).

BASES (continued)

LCO

One channel of RB Purge Isolation-High Radiation instrumentation is required to be OPERABLE. OPERABILITY of the instrumentation includes proper operation of the sample pump. This LCO addresses only the gas sampler portion of the System.

APPLICABILITY

The RB purge isolation–high radiation instrumentation shall be OPERABLE whenever ~~CORE ALTERATIONS or~~ movement of irradiated fuel assemblies within the RB is taking place. These conditions are those under which ~~the potential for fuel~~ damage, and thus radiation release, is the greatest. While in MODES 1, 2, 3, and 4, the Purge Valve Isolation System does not need to be OPERABLE because the purge valves are required to be sealed closed. While in MODES 5 and 6, without fuel handling in progress, the Purge Valve Isolation System does not need to be OPERABLE because the potential for a radioactive release is minimized. The need to use the purge valves in MODES 5 and 6 is in preparation for entry. This capability is required to minimize doses for personnel entering the building and is independent of the automatic isolation capability.

ACTIONS

A.1, A.2.1, and A.2.2

Condition A applies to failure of the high radiation purge function during ~~CORE ALTERATIONS or during~~ movement of irradiated fuel assemblies ~~within the RB.~~

With one channel inoperable ~~during CORE ALTERATIONS or~~ during movement of irradiated fuel ~~assemblies within the RB, the RB~~ purge valves must be closed, or ~~CORE ALTERATIONS and~~ movement of irradiated fuel assemblies within the RB must be suspended. Required Action A.1 accomplishes the function of the high radiation channel. Required Action A.2.1 and Required Action A.2.2 place the unit in a configuration in which purge isolation on high radiation is not required. The Completion Time of "Immediately" is consistent with the urgency associated with the loss of RB isolation capability under conditions in which the fuel handling accidents are possible and the high radiation function provides the only automatic actions to mitigate radiation release.

SURVEILLANCE REQUIREMENTS

SR 3.3.16.1

SR 3.3.16.1 is the performance of the CHANNEL CHECK for the RB purge isolation–high radiation instrumentation once every 12 hours to ensure that a gross failure of instrumentation has not occurred. The CHANNEL CHECK is normally a comparison of the parameter indicated on the

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.16.1 (continued)

radiation monitoring instrumentation channel to a similar parameter on other channels. It is based on the assumption that instrument channels monitoring the same parameter should read approximately the same value. Significant deviations between two instrument channels could be an indication of excessive instrument drift in one of the channels or of something even more serious. Performance of the CHANNEL CHECK helps to ensure that the instrumentation continues to operate properly between each CHANNEL CALIBRATION. The high radiation instrumentation should be compared to similar unit instruments located throughout the unit. If the radiation monitor uses keep alive sources or check sources OPERABLE from the control room, the CHANNEL CHECK should also note the detector's response to these sources.

Agreement criteria are based on a combination of the channel instrument uncertainties, including isolation, indication, and readability. If a channel is outside the criteria, it may be an indication that the transmitter or the signal processing equipment has drifted outside its limit. If the channels are within the criteria, it is an indication that the channels are OPERABLE. The 12 hour Frequency, about once every shift, is based on operating experience that demonstrates channel failure is rare. Additionally, control room alarms and annunciators are provided to alert the operator to various "trouble" conditions associated with the instrument.

SR 3.3.16.2

This SR requires the performance of a CHANNEL FUNCTIONAL TEST to ensure that the channel can perform its intended function. The frequency requires the isolation capability of the reactor building purge valves to be verified functional once each refueling outage prior to CORE ALTERATIONS or movement of irradiated fuel assemblies within containment. This ensures that this function is verified prior to irradiated fuel assembly handling within containment. This test verifies the capability of the instrumentation to provide the RB isolation.

SR 3.3.16.3

CHANNEL CALIBRATION is a complete check of the instrument loop and the sensor. The test verifies that the channel responds to a measured parameter within the necessary range and accuracy.

The 18 month Frequency is based on engineering judgment and industry accepted practice.

BASES

LCO (continued)

The CRVS Booster Fan trains are considered OPERABLE when the individual components necessary to control operator exposure are OPERABLE in both trains. A CRVS Booster Fan train is considered OPERABLE when the associated:

a. Booster Fan is OPERABLE;

b. HEPA filter and carbon absorber are not excessively restricting flow, and are capable of performing their filtration functions; and

c. Ductwork, valves, and dampers are OPERABLE, and control room pressurization can be maintained with both trains operating.

In addition, the control room boundary, including the integrity of the walls, floors, ceilings, ductwork, and access doors, must be maintained within the assumptions of the design analysis.

Breaches (excluding the removal of system performance test port caps per testing procedures) in the CRVS, most commonly due to the opening of access doors, introduces the possibility of allowing unfiltered or unanalyzed concentrations of inleakage into the Control Room. This applies to breaches of the outside air filter trains, main air handling units and all ductwork outside the Control Room pressure boundary. Breaches are equivalent to two Booster Fan trains out of service.

APPLICABILITY

In MODES 1, 2, 3, and 4, the CRVS Booster Fan trains must be OPERABLE to reduce radiation dose to personnel in the control room during and following an accident. ← Add per attached insert

ACTIONS

A.1

With the two CRVS Booster Fan trains incapable of pressurizing the control room, the capability to pressurize the control room must be restored within 30 days. In this Condition, the capability to minimize the radiation dose to personnel located in the control room during and after an accident is not assured. One or both CRVS Booster Fan trains may be OPERABLE in this Condition. If one or both CRVS Booster Fans are simultaneously inoperable, the Completion Time for these separate Conditions is more limiting than the 30 day Completion Time for Action A.1. If OPERABLE the CRVS Booster Fan train(s) can provide some

Insert into Bases for TSB 3.7.9

To Applicability:

During movement of recently irradiated fuel assemblies, the CRVS Booster Fan trains must be OPERABLE to cope with a release due to a fuel handling accident involving handling recently irradiated fuel. Due to radioactive decay, CRVS is only required to mitigate fuel handling accidents involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous 72 hours).

BASES

ACTIONS

A.1 (continued)

dose reduction. The 30 day Completion Time is based on the low probability of an accident occurring during the time period and the potential for OPERABLE CRVS Booster Fan trains to provide some dose reduction.

B.1

With one CRVS Booster Fan train inoperable for reasons other than Condition A, action must be taken to restore the train to OPERABLE status within 72 hours. In this Condition, the remaining OPERABLE CRVS Booster Fan train provides some dose reduction for personnel in the control room. The 72 hour Completion Time is based on the low probability of an accident occurring during this time period, and ability of the remaining train to provide some dose reduction.
a note is being added to allow for an additional 96 hours when entering this condition for implementation of Control Room intake/Booster fan modification.

C.1

With the two CRVS Booster Fan trains inoperable for reasons other than Condition A, one train must be restored to OPERABLE status within 24 hours. In this Condition, the capability to minimize the radiation dose to personnel located in the control room during and after an accident is unavailable. The 24 hour Completion Time is based on the low probability of an accident occurring during this time period.
a note is being added to allow for an additional 48 hours when entering this condition for implementation of Control Room intake/booster fan modification.

D.1

If the inoperable CRVS Booster Fan trains cannot be restored to OPERABLE status within the required Completion Time, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 12 hours, and in MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.
← Insert attached

SURVEILLANCE REQUIREMENTS

SR 3.7.9.1

Standby systems should be checked periodically to ensure that they function properly. As the environment and normal operating conditions on this system are not severe, testing each train once every 92 days

Insert into ACTIONS for the Bases of TS 3.7.9:

E.1

During movement of recently irradiated fuel assemblies, when one or more CRVS trains are inoperable, action must be taken immediately to suspend activities that could release radioactivity that might require isolation of the control room. This places the unit in a condition that minimizes the accident risk. This does not preclude the movement of fuel to a safe position.

B 3.7 PLANT SYSTEMS

B 3.7.10 Penetration Room Ventilation System (PRVS)

BASES

BACKGROUND

The PRVS filters air from the area of the active penetration rooms during the recirculation phase of a loss of coolant accident (LOCA).

The PRVS consists of two independent, redundant trains. Each train consists of a prefilter, a high efficiency particulate air (HEPA) filter, an activated carbon adsorber section for removal of gaseous activity (principally iodines), and a fan. Ductwork, valves or dampers, and instrumentation also form part of the system. The system initiates filtered ventilation of the Reactor Building penetration rooms area following receipt of an Engineered Safeguards actuation signal (ESAS).

The PRVS is a standby system. During emergency operations, the PRVS valves are realigned, and fans are started to begin filtration. Upon receipt of the ESAS signal(s), the stream of ventilation air discharges through the system filter trains. The prefilters remove any large particles in the air, and any entrained water droplets present, to prevent excessive loading of the HEPA filters and carbon adsorbers.

The PRVS is discussed in the UFSAR, Sections 6.5.1, 9.4.7, and 15.4.7 (Refs. 1, 2, and 3, respectively).

APPLICABLE SAFETY ANALYSES

Originally The design basis of the PRVS is established by the Maximum Hypothetical Accident (MHA). In such a case, the system limits radioactive releases to within 10 CFR 100 (Ref. 7) requirements and personnel doses in the Control Room are maintained within the limits of 10 CFR 20 (Ref. 4). ~~The analysis of the effects and consequences of an MHA is presented in Reference 3.~~ However, with the adoption of the alternate source term and the installation of various plant modifications, the PRVS is no longer credited in dose analysis calculations and is not required to meet 10CFR50.67 (Ref. 8) dose limits.

The PRVS also actuates following a large and small break LOCA, in those cases where the unit goes into the recirculation mode of long term cooling, and to cleanup releases of smaller leaks, such as from valve stem packing.

Following a LOCA, an ESAS starts the PRVS fans and opens the dampers located in the penetration room outlet ductwork.

The PRVS does not ~~satisfies~~ satisfy Criterion 3 of 10 CFR 50.36 (Ref. 5). PRVS is retained in this Specification for ALARA purposes only.

BASES (continued)

LCO

Two independent and redundant trains of the PRVS are required to be OPERABLE to ensure that at least one is available, assuming that a single failure disables the other train coincident with loss of offsite power.

The PRVS is considered OPERABLE when the individual components necessary to maintain the penetration room filtration are OPERABLE in both trains.

A PRVS train is considered OPERABLE when its associated:

a. Fan is OPERABLE;

b. HEPA filter and carbon adsorber are not excessively restricting flow, and are capable of performing their filtration functions; and

c. Ductwork, valves, and dampers are OPERABLE, and air flow can be maintained.

In addition, the penetration room boundaries, including the integrity of the walls, floors, ceilings, ductwork, and access doors, must be maintained within the assumptions of the design analysis.

APPLICABILITY

In MODES 1, 2, 3, and 4, the PRVS is required to be OPERABLE consistent with the OPERABILITY requirements of the containment.

In MODES 5 and 6, the PRVS is not required to be OPERABLE since the containment is not required to be OPERABLE.

ACTIONS

A.1

With one PRVS train inoperable, action must be taken to restore the PRVS train to OPERABLE status within ~~7~~ days. ~~During~~ This time~~, the remaining OPERABLE train~~ is ~~adequate to perform the PRVS safety function. However, the overall reliability is reduced because a single failure in the OPERABLE PRVS train could result in loss of PRVS function.~~

The ~~7~~ day Completion Time is appropriate ~~because the risk contribution is less than that of the ECCS (72 hour Completion Time), and this system is not a direct support system for the ECCS.~~ The ~~7~~ day Completion Time is based on the low probability of an accident occurring during this time period~~, and ability of the remaining train to provide the required capability~~.

BASES

ACTIONS (continued)

~~B.1 and B.2~~

With two PRVS trains inoperable or ~~If~~ the required Action and associated Completion Time for Condition A ~~are~~ not met, ~~the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 12 hours, and in MODE 5 within 36 hours.~~ a report must be submitted to the NRC within 30 days detailing how the system will be restored to OPERABLE status. The allowed Completion Time~~s~~ is ~~are~~ reasonable, based on operating experience~~, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems~~.

SURVEILLANCE REQUIREMENTS

SR 3.7.10.1

Standby systems should be checked periodically to ensure that they function properly. Since the environment and normal operating conditions on this system are not severe, testing each train every 6 ~~once a~~ months provides an adequate check on this system. The 6 month ~~31 day~~ Frequency is based on known reliability of equipment ~~and the two train redundancy available~~.

SR 3.7.10.2

This SR verifies that the required PRVS testing is performed in accordance with the Ventilation Filter Testing Program (VFTP). The VFTP includes testing HEPA filter performance and carbon adsorber efficiency. Specific test frequencies and additional information are discussed in detail in the VFTP.

SR 3.7.10.3

This SR verifies that each PRVS train starts and operates on an actual or simulated actuation signal. The 18 month Frequency is consistent with the guidance in Reference 6.

SR 3.7.10.4

This SR verifies ~~the integrity of the penetration rooms area. The~~ exists ability of the PRVS to maintain ~~a negative pressure, with respect to outside atmosphere,~~ flow ≥ 800 cfm and ≤ 1200 cfm is periodically tested to verify proper functioning of the PRVS. ~~During the post accident mode of operation, the PRVS is~~ This ~~will~~ ensures that air ~~current~~ turnover and filtration of the area contents will be maintained for ALARA purposes.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.7.10.4 (continued)

~~designed to maintain a slight negative pressure in the penetration rooms with respect to outside atmosphere~~ to prevent unfiltered LEAKAGE. ~~The PRVS is designed to maintain this negative pressure at a flow rate of 1000 ± 10% cfm from the area.~~ The Frequency of 18 months on a STAGGERED TEST BASIS is consistent with industry practice and other filtration SRs. The Frequency of 18 months on a STAGGERED TEST BASIS is consistent with industry practice and other filtration SRs.

~~SR 3.7.10.5~~

~~Operating the PRVS filter bypass valve is necessary to ensure that the system functions properly. The OPERABILITY of the PRVS filter bypass valve is verified if it can be opened. An 18 month Frequency is consistent with the guidance in Reference 6.~~

REFERENCES

1. ~~UFSAR~~, Section 6.5.1.
2. UFSAR, Section 9.4.7.
3. UFSAR, Section 15.15.
4. 10 CFR 20.
5. 10 CFR 50.36.
6. ~~Regulatory Guide 1.52.~~
7. 10 CFR 100.
8. 10 CFR 50.67.
9. Dose Calculations

BASES (continued)

LCO (continued)

inoperable for Unit 2. If both dampers close, an adequate flow path for OPERABILITY is maintained even if one of two motor operated dampers on Unit 2 fail closed. If the Unit 1 dampers fail closed, OPERABILITY is not affected for the AHU-35 failure scenario. OPERABILITY is not maintained if one or both of the fire dampers between cable rooms or equipment rooms is closed. Compensatory measures, such as opening the damper and posting a fire watch must be taken to maintain OPERABILITY.

The CRACS is considered OPERABLE when the individual components that are necessary to maintain control area temperature are OPERABLE in both trains of CRVS and WC System. Each CRVS train listed in Table B 3.7.16-1 includes the associated ductwork, instrumentation, and air handling unit, which includes the fan, fan motor, cooling coils, and isolation dampers. Each WC train consists of a chiller, chilled water pump, condenser service water pump, and associated controls. Although each chilled water pump is normally associated with, and aligned to, a specific chiller, any OPERABLE chilled water pump maybe aligned to any OPERABLE chiller to maintain one OPERABLE train when a component has been removed from service. The two redundant trains can include a temporarily installed full-capacity control area cooling train. Any temporary cooling train shall have a power source with availability equivalent to the source of the permanently installed train. A temporary cooling train power source with equivalent availability shall include procedural controls for:

1. Normal Auxiliary power (e.g. B4T-7) for normal operation.
2. Swapping to a Keowee backed power supply (e.g. 3TD-15) following a LOOP.

In addition, the CRACS must be OPERABLE to the extent ~~that air circulation can be maintained.~~

APPLICABILITY

In MODES 1, 2, 3, ~~and~~ 4 and during movement of recently irradiated fuel assemblies (i.e., fuel that has occupied part of a critical reactor core within the previous 72 hours), the CRACS must be OPERABLE to ensure that the control area temperature will not exceed equipment OPERABILITY requirements.

BASES

ACTIONS (continued)

D.1 and D.2

If the Required Actions and associated Completion Times of Conditions A, B, or C are not met in MODE 1, 2, 3, or 4, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 12 hours, and in MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner without challenging unit systems.

Insert 1

FE.1

If both CRVS trains or both WC trains are inoperable during MODE 1, 2, 3, or 4, the CRACS may not be capable of performing the intended function and the unit is in a condition outside the accident analyses. Therefore, LCO 3.0.3 must be entered immediately.

Insert 2

SURVEILLANCE REQUIREMENTS

SR 3.7.16.1

This SR verifies that the heat removal capability of the system is sufficient to maintain the temperature in the control room and cable room at or below 80°F and maintain the temperature in the electrical equipment room at or below 85°F. The temperature is determined by reading gauges in each area or computer points which are considered representative of the average area temperature. These temperature limits are based on operating history and are intended to provide an indication of degradation of the cooling systems. The limits are conservative with respect to equipment operability temperature limits. The values for the SR are values at which the system is removing sufficient heat to meet design requirements (i.e., OPERABLE) and sufficiently above the values associated with normal operation during hot weather. The temperature in the equipment room is typically slightly higher than the temperature in the control room or cable room. Because of that, a higher value is specified for this area. The 12 hour Frequency is appropriate since significant degradation of the CRACS is slow and is not expected over this time period.

REFERENCES

1. UFSAR, Section 3.11.5.
2. UFSAR, Section 9.4.1.

Insert 1

E.1 and E.2

During movement of recently irradiated fuel, if the inoperable CRACS train cannot be restored to OPERABLE status within the required Completion Time, the OPERABLE CRACS train must be placed in operation immediately. This action ensures that the remaining train is OPERABLE, that no failures preventing actuation will occur, and that any active failure will be readily detected.
An alternative to Required Action E.1 is to immediately suspend activities that could release radioactivity that might require the isolation of the control room. This places the unit in a condition that minimizes accident risk. This does not preclude the movement of fuel to a safe position.

Insert 2

G.1

During movement of recently irradiated fuel assemblies, with two CRACS trains inoperable, action must be taken to immediately suspend activities that could release radioactivity that might require isolation of the control room. This places the unit in a condition that minimizes accident risk. This does not preclude the movement of fuel to a safe position.

B 3.7 PLANT SYSTEMS

B 3.7.17 Spent Fuel Pool Ventilation System (SFPVS)

BASES

BACKGROUND

Ventilation air for the Spent Fuel Pool Area is supplied by an air handling unit which consists of roughing filters, steam heating coil, cooling coil supplied by low pressure service water, and a centrifugal fan. In the normal mode of operation, the air from the Spent Fuel Pool Area is exhausted directly to the unit vents by the general Auxiliary Building exhaust fans. The filtered exhaust system consists of a single filter train and two 100 percent capacity vane axial fans. The filter train utilized is the Reactor Building Purge Filter Train. The Unit 2 Reactor Building purge filter train is used for the combined Unit 1 and 2 Spent Fuel Pool Ventilation System, The Unit 3 Reactor Building purge filter train is used for the Unit 3 SFP Ventilation System. The filter train is comprised of prefilters, HEPA filters, and charcoal filters. To control the direction of air flow, i.e., to direct the air from the Fuel Pool Area to the Reactor Building Purge Filter Train, a series of pneumatic motor operated dampers are provided along with a crossover duct from the Fuel Pool to the filter train.

The SFPVS is discussed in the UFSAR, Section 9.4.2, (Ref. 1).

APPLICABLE SAFETY ANALYSES

The analysis of the limiting fuel handling accident, the cask drop accident, given in Reference 2, assumes that a certain number of fuel assemblies are damaged. The DBA analysis for the cask drop accident, does not assume operation of the SFPVS. These assumptions and the analysis are consistent with the guidance ~~provided in Regulatory~~ Guide 1.~~25~~ 183 (Ref. 3). in order to meet the requirements of 10CFR 50.67 (Ref. 4).

The SFPVS ~~does not~~ satisfy the criteria in 10 ~~CFR 50.36~~
The SFPVS is retained in this Specification for ALARA purposes.

LCO

~~Two redundant trains of the SFPVS are required to be OPERABLE to ensure that at least one is available, assuming a single failure that disables the other train.~~

With the adoption of the alternate Source term and the installation of various plant modifications SFPVS is not credited in dose analysis calculations. Therefore, there are no specific operability requirements for this system.

BASES

LCO (continued)

An SFPVS train is considered OPERABLE when its associated:

1. Fan is OPERABLE;

   filter trains are intact; and

2. ~~HEPA filter and charcoal adsorber are not excessively restricting flow, and are capable of performing their filtration functions; and~~

3. Ductwork and dampers are OPERABLE, and air flow can be maintained.

The LCO is modified by a ~~two~~ Note~~s~~. ~~Note 1 states LCO 3.0.3 does not apply. If moving fuel or conducting crane operations with load over the storage pool while in MODE 5 or 6, LCO 3.0.3 would not specify any action. If moving fuel or conducting crane operations with load over the storage pool while in MODE 1, 2, 3, or 4, the fuel movement is independent of reactor operation. Therefore, inability to suspend movement of fuel assemblies is not a sufficient reason to require a reactor shutdown.~~ The Note ~~2~~ states the requirements of this LCO is not applicable during reracking operations with no fuel in the spent fuel pool. With no fuel in the spent fuel pool, the potential release of radioactive material to the environs resulting from crane operations ~~with load~~ over the storage pool is substantially ~~reduced.~~

APPLICABILITY

During movement of recently irradiated fuel in the fuel handling area or during crane operations with loads over the spent fuel pool, the SFPVS ~~is always required to be OPERABLE.~~ shall be OPERABLE or a plan established to return the system to OPERABLE status.

ACTIONS

A.1 ~~and A.2~~

With one SFPVS train inoperable, action must be taken to restore the SFPVS train to OPERABLE status within 90 days ~~the OPERABLE SFPVS train must be started immediately with its discharge through the associated reactor building purge filter or fuel movement in the spent fuel pool and crane operations with loads over the spent fuel pool suspended. This action ensures that the remaining train is OPERABLE, and that any active failures will be readily detected.~~

~~If the system is not placed in operation, this action requires suspension of fuel movement and suspension of crane operation with loads over the spent fuel pool, which precludes a fuel handling accident. This action does not preclude the movement of fuel assemblies or crane loads to a safe position.~~

This completion time is considered appropriate since the system is no longer credited in dose analysis calculations and is not required to maintain 10CFR50.67 dose limits (Ref. 4).

BASES

ACTIONS (continued)

B.1 With two SFPVS trains inoperable or the Required Action and associated Completion Time for Condition A not being met,

~~When two~~ trains of ~~the~~ SFPVS ~~are inoperable during movement of fuel in the spent fuel pool, the unit must be placed in a condition in which the LCO does not apply. This Action involves immediately suspending movement of fuel assemblies in the spent fuel pool and suspension of crane operations with loads over the spent fuel pool. This does not preclude the movement of fuel or crane loads to a safe position.~~ a report must be submitted within 30 days to the NRC outlining the plan for restoring the system to OPERABLE status. This completion time is considered appropriate since the system is no longer credited in dose analysis calculations and is not required to maintain 10CFR50.67 dose limits. (Ref. 4)

SURVEILLANCE REQUIREMENTS

SR 3.7.17.1

Standby systems should be checked periodically to ensure that they function properly. As the environment and normal operating conditions on this system are not severe, testing each train once every ~~month~~ six months provides an adequate check on this system. ~~Systems without heaters need only be operated through the associated reactor building purge filters at a design flow ± 10% for ≥ 15 minutes to demonstrate the function of the system. The 31 day Frequency is based on the known reliability of the equipment and the two train redundancy.~~

The system is no longer credited in dose analysis calculations and is not required to maintain 10CFR50.67 dose limits.

SR 3.7.17.2

This SR verifies that the required SFPVS testing is performed in accordance with the Ventilation Filter Testing Program (VFTP). The VFTP includes testing HEPA filter performance, charcoal adsorber efficiency, minimum system flow rate, and the physical properties of the activated charcoal (general use and following specific operations). Specific test frequencies and additional information are discussed in detail in the VFTP.

REFERENCES

1. ~~UFSAR, Section 9.4.2.~~

2. UFSAR, Section 15.11.

3. Regulatory Guide 1.~~25~~ 183.

4. 10 CFR 50.67

5. Dose Calculations

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.2 AC Sources – Shutdown

BASES

BACKGROUND

A description of the AC sources, except AC sources utilizing transformer CT-5, is provided in the Bases for LCO 3.8.1, "AC Sources – Operating." An additional source of AC power is available either directly from the 100 kV Central Tie Substation or from the combustion turbines at Lee Steam Station via a 100 kV transmission line connected to Transformer CT-5. This single 100 kV circuit is connected to the 100 kV transmission system through the substation at Central, located eight miles from Oconee. The Central Substation is connected to Lee Steam Station twenty-two miles away through a similar 100 kV line. This line can either be isolated from the balance of the transmission system to supply emergency power to Oconee from Lee Steam Station, or offsite power can be supplied directly from the 100 kV system from the Central Tie Substation. When CT-5 is energized from the 100 kV system, this is an acceptable offsite source for Oconee Units in MODES 5 and 6. When CT-5 is energized from an OPERABLE Lee Combustion Turbine (LCT) and isolated from the balance of the transmission system, this source is an acceptable emergency power source.

Located at Lee Steam Station are three 44.1 MVA combustion turbines. One of these three combustion turbines can be started in one hour and connected to the 100 kV line. Transformer CT-5 is sized to carry the engineered safeguards auxiliaries of one unit plus the shutdown loads of the other two units.

APPLICABLE SAFETY ANALYSES

The OPERABILITY of the minimum AC sources during MODES 5 and 6 and during movement of recently irradiated fuel assemblies ensures that:

a. The unit can be maintained in the shutdown or refueling condition for extended periods;

b. Sufficient instrumentation and control capability is available for monitoring and maintaining the unit status; and

c. Adequate AC electrical power is provided to mitigate events postulated during shutdown, such as a fuel handling accident involving handling recently irradiated fuel. Due to radioactive decay, AC electrical power is only required to mitigate fuel handling accidents involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous 72 hours).

BASES

APPLICABLE SAFETY ANALYSES (continued)

In general, when the unit is shut down, the Technical Specifications requirements ensure that the unit has the capability to mitigate the consequences of postulated accidents. However, assuming a single failure and concurrent loss of all offsite or all onsite power is not required. The rationale for this is based on the fact that many accidents that are analyzed in MODES 1, 2, 3, and 4 have no specific analyses in MODES 5 and 6. Worst-case bounding events are deemed not credible in MODES 5 and 6 because the energy contained within the reactor pressure boundary, reactor coolant temperature and pressure, and the corresponding stresses result in the probabilities of occurrence being significantly reduced or eliminated, and in minimal consequences. These deviations from accident analysis assumptions and design requirements during shutdown conditions are allowed by the LCO for required systems.

During MODES 1, 2, 3, and 4 various deviations from the analysis assumptions and design requirements are allowed within the Required Actions. This allowance is in recognition that certain testing and maintenance activities must be conducted provided an acceptable level of risk is not exceeded. During MODES 5 and 6, performance of a significant number of required testing and maintenance activities is also required. In MODES 5 and 6, the activities are generally planned and administratively controlled. Relaxations from MODE 1, 2, 3, and 4 LCO requirements are acceptable during shutdown MODES based on:

a. The fact that time in an outage is limited. This is a risk prudent goal as well as a utility economic consideration;

b. Requiring appropriate compensatory measures for certain conditions. These may include administrative controls, reliance on systems that do not necessarily meet typical design requirements applied to systems credited in operating MODE analyses, or both;

c. Prudent utility consideration of the risk associated with multiple activities that could affect multiple systems; and

d. Maintaining, to the extent practical, the ability to perform required functions (even if not meeting MODE 1, 2, 3, and 4 OPERABILITY requirements) with systems assumed to function during an event.

BASES

APPLICABLE SAFETY ANALYSES (continued)

In the event of an accident during shutdown, this LCO ensures the capability to support systems necessary to avoid immediate difficulty, assuming either a loss of all offsite power or a loss of all onsite emergency power sources and their associated emergency power paths.

The AC sources satisfy Criterion 3 of the 10 CFR 50.36 (Ref. 1).

LCO

One offsite source capable of supplying the onsite power distribution system(s) of LCO 3.8.9, "Distribution Systems – Shutdown," ensures that all required loads are powered from offsite power. An OPERABLE emergency power source, associated with a distribution system required to be OPERABLE by LCO 3.8.9, ensures a diverse power source is available to provide electrical power support, assuming a loss of the offsite source. Together, OPERABILITY of the required offsite source and emergency power source ensure the availability of sufficient AC sources to operate the unit in a safe manner and to mitigate the consequences of postulated events during shutdown (e.g., fuel handling accidents). involving handling recently irradiated fuel

The qualified offsite source must be capable of maintaining rated frequency and voltage, and accepting required loads during an accident, while connected to the main feeder bus(es). Qualified offsite source are those that are described in the UFSAR and are part of the licensing basis for the unit.

An offsite source can be an offsite circuit available or connected through to the 230 kV switchyard to the startup transformer and to one main feeder bus. Additionally, the offsite source can be an offsite circuit available or connected though the 230 kV switchyard (525 kV switchyard for Unit 3) to a backcharged unit main step-up transformer and unit auxiliary transformer to one main feeder bus. Another alternative is the energized Central 100 kV switchyard available or connected through the 100 kV line and transformer CT-5 to one main feeder bus.

In MODES 5 or 6 and during movement of irradiated fuel, a Lee Combustion Turbine (LCT) energizing one standby bus via an isolated power path to one main feeder bus can be utilized as an emergency power source. The LCT is required to provide power within limits of voltage and frequency using the 100 kV transmission line electrically separated from the system grid and offsite loads energizing one or more standby buses through transformer CT-5. The required number of energized standby buses is based upon the requirements of LCO 3.8.9, "Distribution System – Shutdown."

BASES

LCO (continued)

An OPERABLE KHU must be capable of starting, accelerating to rated speed and voltage, and connecting to the main feeder bus(es). The sequence must be capable of being accomplished within 23 seconds after a manual emergency start initiation signal. An emergency power source must be capable of accepting required loads and must continue to operate until offsite power can be restored to the main feeder buses.

This LCO is modified by three Notes. Note 1 indicates that a unit startup transformer may be shared with a unit in MODES 5 and 6. Note 2 indicates that the requirements of Specification 5.5.19, "Lee Combustion Turbine Testing Program," shall be met when a Lee Combustion Turbine (LCT) is used for the emergency power requirements. Note 3 indicates that the required emergency power source and the required offsite power source shall not be susceptible to a failure disabling both sources.

The required emergency power source and required offsite source cannot be susceptible to a failure disabling both sources. If the required offsite source is the 230 kV switchyard and the startup transformer energizing the required main feeder bus(es), the KHU and its required underground emergency power path are required to be OPERABLE since it is not subject to a failure, such as an inoperable startup transformer, which simultaneously disables the offsite source. If the Central switchyard is serving as the required offsite source through the CT-5 transformer with a power path through only one standby bus, the KHU and its required underground emergency power path cannot be used as the emergency power source if the power path is through the same standby bus since a single failure of a standby bus would disable both sources. Conversely, if an LCT is being used as an emergency power source, the required offsite source must be an offsite circuit available or connected through the startup transformer or a backcharged unit main step-up transformer and the unit auxiliary transformer.

APPLICABILITY

The AC sources required to be OPERABLE in MODES 5 and 6 and during movement of irradiated fuel assemblies provide assurance that:

recently

a. Systems to provide adequate coolant inventory makeup are available for the irradiated fuel assemblies;

b. Systems needed to mitigate a fuel handling accident are available;
involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous 72 hours);

c. Systems necessary to mitigate the effects of events that can lead to core damage during shutdown are available; and

BASES

APPLICABILITY (continued)

d. Instrumentation and control capability is available for monitoring and maintaining the unit in a cold shutdown condition or refueling condition.

The AC power requirements for MODES 1, 2, 3, and 4 are covered in LCO 3.8.1.

ACTIONS

A.1

An offsite source would be considered inoperable if it were not available to one required main feeder bus. Although two main feeder buses may be required by LCO 3.8.9, the one main feeder bus with offsite power available may be capable of supporting sufficient required features to allow continuation of CORE ALTERATIONS and recently irradiated fuel movement. By the allowance of the option to declare features inoperable with no offsite power available, appropriate restrictions will be implemented in accordance with the affected required features LCO's ACTIONS.

A.2.1, A.2.2, A.2.3, A.2.4, B.1, B.2, B.3, and B.4

With the offsite source not available to all required features, the option would still exist to declare all required features inoperable. Since this option may involve undesired administrative efforts, the allowance for sufficiently conservative actions is made. With the required emergency power source inoperable, the minimum required diversity of AC power sources is not available. It is, therefore, required to suspend CORE ALTERATIONS, movement of recently irradiated fuel assemblies, and operations involving positive reactivity additions. The Required Action to suspend positive reactivity additions does not preclude actions to maintain or increase reactor vessel inventory provided the required SDM is maintained.

Suspension of these activities does not preclude completion of actions to establish a safe conservative condition. These actions minimize the probability or the occurrence of postulated events. It is further required to immediately initiate action to restore the required AC sources and to continue this action until restoration is accomplished in order to provide the necessary AC power to the unit safety systems.

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.4 DC Sources – Shutdown

BASES

BACKGROUND

A description of the 125 VDC Vital I&C sources is provided in the Bases for LCO 3.8.3, "DC Sources – Operating."

APPLICABLE SAFETY ANALYSES

The initial conditions of Accidents and transients analyses in the UFSAR, Chapter 6 (Ref. 1) and Chapter 15 (Ref. 2), assume that Engineered Safeguard (ES) systems are OPERABLE. The 125 VDC Vital I&C electrical power system provides normal and emergency DC electrical power for the emergency auxiliaries, and control and switching during all MODES of operation.

Although the 230 kV Switchyard 125 VDC Power System provides control power for circuit breaker operation in the 230 kV switchyard as well as DC power for degraded grid voltage protection circuits during all MODES of operation, no credit is taken for these functions in MODES 5 and 6.

The OPERABILITY of the 125 VDC Vital I&C sources is consistent with the initial assumptions of the accident analyses and the requirements for the supported systems' OPERABILITY.

The OPERABILITY of the minimum 125 VDC Vital I&C electrical power sources during MODES 5 and 6 and during movement of irradiated fuel assemblies ensures that:

a. The unit can be maintained in the shutdown or refueling condition for extended periods;

b. Sufficient instrumentation and control capability is available for monitoring and maintaining the unit status; and

c. Adequate DC electrical power is provided to mitigate events postulated during shutdown, such as a fuel handling accident.

The 125 VDC Vital I&C sources satisfy Criterion 3 of 10 CFR 50.36 (Ref. 3).

BASES (continued)

LCO

The 125 VDC Vital I&C electrical power sources, each source consisting of one battery, one battery charger, and the corresponding control equipment and interconnecting cabling within the source, are required to be OPERABLE to support required distribution systems required OPERABLE by LCO 3.8.9, "Distribution Systems – Shutdown" and shall include at least one of the unit's 125 VDC Vital I&C power sources. This ensures the availability of sufficient 125 VDC Vital I&C electrical power sources to operate the unit in a safe manner and to mitigate the consequences of postulated events during shutdown (e.g., fuel handling accidents).

APPLICABILITY

The 125 VDC Vital I&C electrical power sources required to be OPERABLE in MODES 5 and 6 and during movement of irradiated fuel assemblies, provide assurance that:

a. Required features to provide adequate coolant inventory makeup are available for the irradiated fuel assemblies in the core;

b. Required features needed to mitigate a fuel handling accident are available;

c. Required features necessary to mitigate the effects of events that can lead to core damage during shutdown are available; and

d. Instrumentation and control capability is available for monitoring and maintaining the unit in a cold shutdown condition or refueling condition.

The 125 VDC Vital I&C electrical power requirements for MODES 1, 2, 3, and 4 are covered in LCO 3.8.3.

ACTIONS

A.1, A.2.1, A.2.2, A.2.3, and A.2.4

If two or more 125 VDC Vital I&C panelboards are required by LCO 3.8.9, the remaining 125 VDC Vital I&C panelboards with 125 VDC Vital I&C power available may be capable of supporting sufficient systems to allow continuation of CORE ALTERATIONS and fuel movement. By allowing the option to declare required features inoperable with the associated 125 VDC Vital I&C power source(s) inoperable, appropriate restrictions

BASES

ACTIONS

A.1, A.2.1, A.2.2, A.2.3, and A.2.4 (continued)

will be implemented in accordance with the affected required features LCO ACTIONS. In many instances this option may involve undesired administrative efforts. Therefore, the allowance for sufficiently conservative actions is made (i.e., to suspend CORE ALTERATIONS, movement of irradiated fuel assemblies, and operations involving positive reactivity additions). The Required Action to suspend positive reactivity additions does not preclude actions to maintain or increase reactor vessel inventory, provided the required SDM is maintained.

Suspension of these activities shall not preclude completion of actions to establish a safe conservative condition. These actions minimize probability of the occurrence of postulated events. It is further required to immediately initiate action to restore the required 125 VDC Vital I&C electrical power sources and to continue this action until restoration is accomplished in order to provide the necessary 125 VDC Vital I&C electrical power to the unit safety systems.

The Completion Time of immediately is consistent with the required times for actions requiring prompt attention. The restoration of the required 125 VDC Vital I&C electrical power sources should be completed as quickly as possible in order to minimize the time during which the unit safety systems may be without sufficient power.

SURVEILLANCE REQUIREMENTS

SR 3.8.4.1

SR 3.8.4.1 requires performance of all Surveillances required by SR 3.8.3.1 through SR 3.8.3.6. Therefore, see the corresponding Bases for LCO 3.8.3 for a discussion of each SR.

This SR is modified by a Note. The reason for the Note is to preclude requiring the OPERABLE 125 VDC Vital I&C sources from being discharged below their capability to provide the required power supply or otherwise rendered inoperable during the performance of SRs. It is the intent that these SRs must still be capable of being met, but actual performance is not required.

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.7 Vital Inverters – Shutdown

BASES

BACKGROUND

A description of the inverters is provided in the Bases for LCO 3.8.6, "Inverters – Operating."

APPLICABLE SAFETY ANALYSES

The initial conditions of Accident and transient analyses in the UFSAR, Chapter 6 (Ref. 1) and Chapter 15 (Ref. 2), assume Engineered Safeguards systems are OPERABLE. The DC to AC inverters are designed to provide the required capacity, capability, redundancy, and reliability to ensure the availability of necessary power to the Reactor Protection System and Engineered Safeguards (ES) System instrumentation and controls so that the fuel, Reactor Coolant System, and containment design limits are not exceeded.

The OPERABILITY of the inverters is consistent with the initial assumptions of the accident analyses and the requirements for the supported systems' OPERABILITY.

The OPERABILITY of the minimum inverters to each 120 VAC Vital Instrumentation panelboards during MODES 5 and 6 ensures that:

a. The unit can be maintained in the shutdown or refueling condition for extended periods;

b. Sufficient instrumentation and control capability is available for monitoring and maintaining the unit status; and

c. Adequate power is available to mitigate events postulated during shutdown, such as a fuel handling accident.

The inverters were previously identified as part of the distribution system and, as such, satisfy Criterion 3 of 10 CFR 50.36 (Ref. 3).

involving handling recently irradiated fuel. Due to radioactive decay, the inverters are only required to mitigate fuel handling accidents involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous 72 hours).

BASES (continued)

LCO

The inverters ensure the availability of electrical power for the instrumentation for systems required to shut down the reactor and maintain it in a safe condition after a transient or accident. The battery powered inverters provide uninterruptible supply of AC electrical power to the 120 VAC Vital Instrumentation panelboards even if the 4.16 kV buses are de-energized. OPERABILITY of the inverters requires that the 120 VAC Vital Instrumentation panelboard be powered by the inverter. This ensures the availability of sufficient inverter power sources to operate the unit in a safe manner and to mitigate the consequences of postulated events during shutdown (e.g., fuel handling accidents).

APPLICABILITY

The inverters required to be OPERABLE in MODES 5 and 6, and during movement of irradiated fuel assemblies provide assurance that:

recently

a. Systems to provide adequate coolant inventory makeup are available for the irradiated fuel in the core;

b. Systems needed to mitigate a fuel handling accident are available;

involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous 72 hours.)

c. Systems necessary to mitigate the effects of events that can lead to core damage during shutdown are available; and

d. Instrumentation and control capability is available for monitoring and maintaining the unit in a cold shutdown condition or refueling condition.

Inverter requirements for MODES 1, 2, 3, and 4 are covered in LCO 3.8.6.

ACTIONS

A.1, A.2.1, A.2.2, A.2.3, and A.2.4

If two or more 120 VAC Vital Instrumentation panelboards are required by LCO 3.8.9, "Distribution Systems – Shutdown," the remaining OPERABLE inverters may be capable of supporting sufficient required features to allow continuation of CORE ALTERATIONS, fuel movement, and operations with a potential for positive reactivity additions. The Required Action to suspend positive reactivity additions does not preclude actions to maintain or increase reactor vessel inventory, provided the required SDM is maintained. By the allowance of the option to declare required features inoperable with the associated inverter(s)

involving handling recently irradiated fuel

BASES

ACTIONS

A.1, A.2.1, A.2.2, A.2.3, and A.2.4 (continued)

inoperable, appropriate restrictions will be implemented in accordance with the affected required features LCOs' Required Actions. In many instances, this option may involve undesired administrative efforts. Therefore, the allowance for sufficiently conservative actions is made (i.e., to suspend CORE ALTERATIONS, movement of irradiated fuel assemblies, and operations involving positive reactivity additions).

Suspension of these activities shall not preclude completion of actions to establish a safe conservative condition. These actions minimize the probability of the occurrence of postulated events. It is further required to immediately initiate action to restore the required inverters and to continue this action until restoration is accomplished in order to provide the necessary inverter power to the unit safety systems.

The Completion Time of immediately is consistent with the required times for actions requiring prompt attention. The restoration of the required inverters should be completed as quickly as possible in order to minimize the time the unit safety systems may be without power or powered from an alternate regulated voltage source.

SURVEILLANCE REQUIREMENTS

SR 3.8.7.1

This Surveillance verifies that the inverters are functioning properly with all required circuit breakers closed and 120 VAC Vital Instrumentation panelboards energized from the inverter. The verification of proper voltage and frequency output ensures that the required power is readily available for the instrumentation connected to the 120 VAC Vital Instrumentation panelboards. The 7 day Frequency takes into account the redundant capability of the inverters and other indications available in the control room that alert the operator to inverter malfunctions.

REFERENCES

1. UFSAR, Chapter 6.
2. UFSAR, Chapter 15.
3. 10 CFR 50.36.

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.9 Distribution Systems – Shutdown

BASES

BACKGROUND

A description of the AC, DC and AC vital electrical power distribution systems is provided in the Bases for LCO 3.8.8, "Distribution Systems – Operating."

APPLICABLE SAFETY ANALYSES

The initial conditions of accident and transient analyses in the UFSAR, Chapter 6 (Ref. 1) and Chapter 15 (Ref. 2), assume Engineered Safeguards (ES) systems are OPERABLE. The AC, DC, and AC vital electrical power distribution systems are designed to provide sufficient capacity, capability, redundancy, and reliability to ensure the availability of necessary power to ES systems so that the fuel, Reactor Coolant System, and containment design limits are not exceeded.

The OPERABILITY of the AC, DC, and AC vital electrical power distribution systems is consistent with the initial assumptions of the accident analyses and the requirements for the supported systems' OPERABILITY.

The OPERABILITY of the minimum AC, DC, and AC vital electrical power distribution systems during MODES 5 and 6, and during movement of recently irradiated fuel assemblies ensures that:

a. The unit can be maintained in the shutdown or refueling condition for extended periods;

b. Sufficient instrumentation and control capability is available for monitoring and maintaining the unit status; and

c. Adequate power is provided to mitigate events postulated during shutdown, such as a fuel handling accident, involving handling recently irradiated fuel. Due to radioactive decay, AC, DC, and AC vital bus electrical power is only required to mitigate fuel handling accidents involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous 72 hours).

The AC and DC electrical power distribution systems satisfy Criterion 3 of 10 CFR 50.36 (Ref. 3).

BASES (continued)

LCO

Various combinations of portions of systems, equipment, and components are required OPERABLE by other LCOs, depending on the specific plant condition. Implicit in those requirements is the required OPERABILITY of necessary support required features. This LCO explicitly requires the portions of the electrical distribution system necessary to support OPERABILITY of required systems, equipment, and components – all specifically addressed in each LCO and implicitly required via the definition of OPERABILITY- be energized or available to be energized during a power source transfer.

Maintaining these portions of the distribution system as described above ensures the availability of sufficient power to operate the unit in a safe manner to mitigate the consequences of postulated events during shutdown (e.g., fuel handling accidents). involving handling recently irradiated fuel.

APPLICABILITY

The AC and DC electrical power ~~distribution buses, ES power strings and~~ panelboards required to be OPERABLE in MODES 5 and 6, and during movement of ~~irradiated fuel~~ recently assemblies, provide assurance that:

a. S~~ystems to provide~~ adequate coolant inventory makeup are available for the irradiated fuel in the core;

b. Systems needed to mitigate a fuel handling accident ~~are available;~~ involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous 72 hours)

c. ~~Systems necessary to mitigate the effects of events that can lead to core damage during shutdown are available; and~~

d. Instrumentation and control capability is available for monitoring and maintaining the unit in a cold shutdown condition or refueling condition.

The AC, DC, and AC vital electrical power distribution buses, ES power strings and panelboards requirements for MODES 1, 2, 3, and 4 are covered in LCO 3.8.8.

BASES (continued)

ACTIONS

A.1, A.2.1, A.2.2, A.2.3, A.2.4, and A.2.5

Although redundant required equipment may require redundant buses, ES power strings and panelboards of electrical power distribution systems to be OPERABLE, a reduced set of OPERABLE distribution buses, ES power strings and panelboards may be capable of supporting sufficient required features to allow continuation of CORE ALTERATIONS and fuel movement. By allowing the option to declare required equipment associated with an inoperable distribution buses, ES power strings and panelboards inoperable, appropriate restrictions are implemented in accordance with the affected distribution buses, ES power strings and panelboards LCO's Required Actions. In many instances, this option may involve undesired administrative efforts. Therefore, the allowance for sufficiently conservative actions is made (i.e., to suspend CORE ALTERATIONS, movement of irradiated fuel assemblies, and operations involving positive reactivity additions).

Suspension of these activities does not preclude completion of actions to establish a safe conservative condition. These actions minimize the probability of the occurrence of postulated events. It is further required to immediately initiate action to restore the required AC and DC electrical power distribution buses, ES power strings and panelboards and to continue this action until restoration is accomplished in order to provide the necessary power to the unit safety systems.

Notwithstanding performance of the above conservative Required Actions, a required decay heat removal (DHR) subsystem may be inoperable. In this case, Required Actions A.2.1 through A.2.4 do not adequately address the concerns relating to coolant circulation and heat removal. Pursuant to LCO 3.0.6, the DHR ACTIONS would not be entered. Therefore, Required Action A.2.5 is provided to direct declaring DHR inoperable, which results in taking the appropriate DHR actions.

The Completion Time of immediately is consistent with the required times for actions requiring prompt attention. The restoration of the required distribution buses, ES power strings and panelboards should be completed as quickly as possible in order to minimize the time the unit safety systems may be without power.

B 3.9 REFUELING OPERATIONS

B 3.9.3 Containment Penetrations

BASES

BACKGROUND

During ~~CORE ALTERATIONS or~~ movement of irradiated fuel assemblies within containment, a release ~~of fission~~ product radioactivity within containment will be restricted from escaping ~~to the~~ environment when the LCO requirements are met. In MODES 1, 2, 3, and 4, this is accomplished by maintaining containment OPERABLE as described in LCO 3.6.1, "Containment." In MODE 6, the potential for containment pressurization as a result of an accident is not likely; therefore, requirements to isolate the containment from the outside atmosphere can be less stringent. In order to make this distinction, the penetration requirements are referred to as "containment closure" rather than "containment OPERABILITY." Containment closure means that specified escape paths are closed or capable of being closed. Since there is no significant potential for containment pressurization, the Appendix J leakage criteria and tests are not required.

The containment serves to contain fission product radioactivity that may be released from the reactor core following an accident, such that offsite radiation exposures are maintained within the requirements of 10 CFR ~~100~~. Additionally, the containment provides radiation shielding from the fission products that may be present in the containment atmosphere following accident conditions.

The containment equipment hatch, which is part of the containment pressure boundary, provides a means for moving large equipment and components into and out of containment. During ~~CORE ALTERATIONS or~~ movement of irradiated fuel assemblies within containment, the equipment hatch must be held in place by ~~at least four~~ bolts. Good engineering practice dictates that the bolts required by this LCO be approximately equally spaced.

The containment air locks, which are also part of the containment pressure boundary, provide a means for personnel access during MODES 1, 2, 3, and 4 unit operation in accordance with LCO 3.6.2, "Containment Air Locks." Each air lock has a door at both ends. The doors are normally interlocked to prevent simultaneous opening when containment OPERABILITY is required. During periods of unit shutdown

BASES

BACKGROUND (continued)

when containment OPERABILITY is not required, the door interlock mechanism may be disabled, allowing both doors of an air lock to remain open for extended periods when frequent containment ingress and egress is necessary. During ~~CORE ALTERATIONS or~~ movement of recently irradiated fuel assemblies within containment, containment closure is required; therefore, the door interlock mechanism may remain disabled, but one air lock door must always remain closed. Placement of a temporary cover plate in the emergency air lock is an acceptable means for providing containment closure.

The temporary cover plate is installed and sealed against the inner emergency air lock door flange gasket. The temporary cover plate is visually inspected to ensure that no gaps exist. All cables, hoses and service air piping run through the sleeves on the temporary cover plate will also be installed and sealed. The sleeves will also be inspected to ensure that no gaps exist. Leak testing is not required prior to beginning fuel handling operations. Therefore, visual inspection of the temporary cover plate over the emergency air lock satisfies the requirement that the air lock be closed, which constitutes operability for this requirement.

The requirements on containment penetration closure ensure that a release of fission product radioactivity within containment will be restricted from escaping to the environment. The closure restrictions are sufficient to restrict fission product radioactivity release from containment due to a fuel handling accident ~~during refueling~~ involving handling recently irradiated fuel.

The Reactor Building Purge System includes a supply penetration and exhaust penetration. During MODES 1, 2, 3, and 4, two valves in each of the supply and exhaust penetrations are secured in the closed position. The system is not subject to a Specification in MODE 5.

In MODE 6, large air exchanges are necessary to support refueling operations. The purge system is used for this purpose, and two valves in each penetration flow path may be closed on a unit vent high radiation signal.

Other containment penetrations that provide direct access from containment atmosphere to outside atmosphere must be isolated on at least one side. Isolation may be achieved by a closed automatic isolation valve, non-automatic power operated valve, manual isolation valve, blind flange, or equivalent. Equivalent isolation methods may include use of a material that can provide a temporary, atmospheric pressure ventilation barrier for the containment penetration(s) during fuel movements.

BASES (continued)

APPLICABLE SAFETY ANALYSES

During CORE ALTERATIONS or movement of recently irradiated fuel assemblies within containment, the most severe radiological consequences result from a fuel handling accident involving handling recently irradiated fuel. The fuel handling accident is a postulated event that involves damage to irradiated fuel (Ref. 2). A minimum fuel transfer canal water level and the minimum decay time of 72 hours prior to irradiated fuel movement with containment closure capability or a minimum decay time of 72 hours without containment closure capability CORE ALTERATIONS ensure that the release of fission product radioactivity subsequent to a fuel handling accident results in doses that are within the guideline values specified in 10 CFR 50.67 100. The design basis for fuel handling accidents has historically separated the radiological consequences from the containment capability. The NRC staff has treated the containment capability for fuel handling conditions as a logical part of the "primary success path" to mitigate fuel handling accidents, irrespective of the assumptions used to calculate the radiological consequences of such accidents (Ref. 2).

Containment penetrations satisfy Criterion 3 of 10 CFR 50.36.

LCO

This LCO reduces the consequences of a fuel handling accident in containment by limiting the potential escape paths for fission product radioactivity from containment. The LCO requires any penetration providing direct access from the containment atmosphere to the outside atmosphere to be closed except for the OPERABLE containment purge and exhaust penetrations. For the OPERABLE containment purge and exhaust penetrations, this LCO ensures that these penetrations are isolable by the RB purge isolation signal.

This LCO is modified by a note indicating that an emergency air lock door is not required to be closed when a temporary cover plate is installed.

APPLICABILITY

The containment penetration requirements are applicable during CORE ALTERATIONS or movement of recently irradiated fuel assemblies within containment because this is when there is a potential for a fuel handling accident. In MODES 1, 2, 3, and 4, containment penetration requirements are addressed by LCO 3.6.1. In MODES 5 and 6, when CORE ALTERATIONS or movement of irradiated fuel assemblies within containment are is not being conducted, the potential for a fuel handling accident does not exist. Therefore, under these conditions no requirements are placed on containment penetration status.

Additionally, due to radioactive decay, a fuel handling accident involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous 72 hours) will result in doses that are well within the guideline values specified in 10 CFR 50.67 even without containment closure capability.

BASES (continued)

ACTIONS

A.1 and A.2

With the containment equipment hatch, air locks, or any containment penetration that provides direct access from the containment atmosphere to the outside atmosphere not in the required status, including the Containment Purge and Exhaust Isolation System not capable of automatic actuation when the purge and exhaust valves are open, the unit must be placed in a condition in which the isolation function is not needed. This is accomplished by immediately suspending CORE ALTERATIONS and movement of irradiated fuel assemblies within containment. Performance of these actions shall not preclude moving a component to a safe position.

SURVEILLANCE REQUIREMENTS

SR 3.9.3.1

This Surveillance demonstrates that each of the containment penetrations required to be in its closed position is in that position. Also the Surveillance will demonstrate that each open penetration's valve operator has motive power, which will ensure each valve is capable of being closed.

The Surveillance is performed every 7 days during the CORE ALTERATIONS or movement of irradiated fuel assemblies within the containment. The Surveillance interval is selected to be commensurate with the normal duration of time to complete fuel handling operations.

As such, this Surveillance ensures that a postulated fuel handling accident that releases fission product radioactivity within the containment will not result in a release of fission product radioactivity to the environment.

SR 3.9.3.2

This Surveillance demonstrates that each containment purge supply and exhaust isolation valve that is not locked, sealed or otherwise secured in the isolation position actuates to its isolation position on an actual or simulated high radiation signal. The frequency requires the isolation capability of the reactor building purge valves to be verified functional once each refueling outage prior to CORE ALTERATIONS or movement of irradiated fuel assemblies within containment. This ensures that this

BASES

SURVEILLANCE REQUIREMENTS

SR 3.9.3.2 (continued)

function is verified prior to ~~CORE ALTERATIONS or~~ movement of recently irradiated fuel assemblies ~~within containment~~. This Surveillance will ensure that the valves are capable of closing after a postulated fuel handling accident involving handling recently irradiated fuel to limit a ~~release of fission product radioactivity from the containment~~.

REFERENCES

1. UFSAR, Section 15.11.

2. NRC letter to RG & E dated December 7, 1995, R.E. Ginna ~~Nuclear Power Plant Conversion to Improved Standard~~ Technical Specifications - Resolutions of Ginna Design Basis ~~for Refueling~~ Accidents.

3. Regulatory Guide 1.183, July 2000.

B 3.9 REFUELING OPERATIONS

B 3.9.6 Fuel Transfer Canal Water Level

BASES

BACKGROUND

The movement of irradiated fuel assemblies or performance of CORE ALTERATIONS, except during latching and unlatching of CONTROL ROD drive shafts, within containment requires a minimum water level of 21.34 ft above the top of the reactor vessel flange. During refueling, this maintains sufficient water level in the fuel transfer canal, and the spent fuel pool. Sufficient water is necessary to retain iodine fission product activity in the water in the event of a fuel handling accident (Refs. 1 and 2). Sufficient iodine activity would be retained to limit offsite doses from the accident within 10 CFR 100 limits, as provided by the guidance of Reference 3.

APPLICABLE SAFETY ANALYSES

During CORE ALTERATIONS and during movement of irradiated fuel assemblies, the water level in the fuel transfer canal is an initial condition design parameter in the analysis of the fuel handling accident in containment postulated by Regulatory Guide 1.25 (Ref. 1). A minimum water level of 23 ft (Regulatory Position C.1.c of Ref. 1) allows a decontamination factor (DF) of 100 (Regulatory Position C.1.g of Ref. 1) to be used in the accident analysis for iodine. This relates to the assumption that 99% of the total iodine released from the pellet to cladding gap of all the dropped fuel assembly rods is retained by the fuel transfer canal water. The fuel pellet to cladding gap is assumed to contain 10% of the total fuel rod iodine inventory (Ref. 1).

The fuel handling accident analysis inside containment is described in Reference 2. Since the minimum water level of 21.34 feet is less than 23 feet, the assumed iodine DF must be less than 100, according to Ref. 1, and calculated with comparable conservatism. An experimental test program described in WCAP-7828 (Ref. 4) evaluated the extent of removal of iodine released from a damaged irradiated fuel assembly. Using the analytical results from the test program described in WCAP-7828, with a water depth of 21.34 feet, a comparable DF of 89 was determined. With a minimum water level of 21.34 ft, and a minimum decay time of 72 hours prior to fuel handling, the analysis and test programs demonstrate that the iodine release due to a postulated fuel handling accident is adequately captured by the water, and offsite doses are maintained within allowable limits (Ref. 3).

Fuel Transfer Canal water level satisfies Criterion 2 of 10 CFR 50.36.

~~Insert into~~ Applicable ~~Safety~~ Analysis for TSB ~~3.9.6~~

Regulatory Guide 1.183, Appendix B provides guidance for evaluating the radiological consequences of a fuel handling accident in containment and the spent fuel pool building. The methodology stipulates that a minimum water level of 23 ft has been demonstrated to provide decontamination factors (DF) for the elemental and organic species are 500 and 1, respectively, giving an overall effective decontamination factor of 200 (i.e., 99.5% of the total iodine released from the damaged rods is retained by the water). This difference in decontamination factors for elemental (99.85%) and organic iodine (0.15%) species results in the iodine above the water being composed of 57% elemental and 43% organic species. If the depth of the water is different from 23 feet, the decontamination factor should be developed (Ref. 1)."

BASES (continued)

LCO

A minimum fuel transfer canal water level of 21.34 ft above the reactor vessel flange is required to ensure ~~that the radiological~~ consequences of a postulated fuel handling ~~accident inside~~ containment are within acceptable limits as provided by 10 CFR ~~100.~~ 50.67

APPLICABILITY

LCO 3.9.6 is applicable ~~during CORE ALTERATIONS, except during latching and unlatching of CONTROL ROD drive shafts, and~~ when moving irradiated fuel assemblies within the containment. The LCO ~~minimizes the~~ possibility of a fuel handling ~~accident in containment~~ that is beyond the assumptions of the safety analysis. If irradiated fuel is not present in containment, there can be no significant radioactivity release as a result of a postulated fuel handling accident. Requirements for fuel handling accidents in the spent fuel pool are covered by LCO 3.7.11, "Fuel Storage Pool Water Level."

ACTIONS

A.1 ~~and A.2~~

With a water level of < 21.34 ft above the top of the reactor vessel flange, all ~~operations~~ involving ~~CORE ALTERATIONS or~~ movement of irradiated fuel assemblies shall be suspended immediately to ensure that a fuel handling accident ~~cannot occur.~~

The suspension of ~~CORE ALTERATIONS and~~ fuel movement shall not preclude completion of movement of a component to a safe position.

SURVEILLANCE REQUIREMENTS

SR 3.9.6.1

Verification of a minimum water level of 21.34 ft above the top of the reactor vessel flange ensures that the design basis for the postulated fuel handling accident analysis during refueling operations is met. Water at the required level above the top of the reactor vessel flange limits the consequences of damaged fuel rods that are postulated to result from a postulated fuel handling accident inside containment (Ref. 2).

The Frequency of 24 hours is based on engineering judgment and is considered adequate in view of the large volume of water and the normal procedural controls of valve positions, which make significant unplanned level changes unlikely.

BASES (continued)

REFERENCES

1. Regulatory Guide 1.~~25~~183, ~~March 23, 1972.~~ July 2000

2. UFSAR Section 15.11.~~2.~~2.

3. 10 CFR ~~100.10~~ 50.67.

4. WCAP-7828, December 1971

ATTACHMENT 3

Duke Energy Corporation
Technical Justification

ATTACHMENT 3
Description of the Proposed Changes and Technical Justification for Oconee Nuclear Station

BACKGROUND

On October 16, 2001, the license amendment request (LAR) for approval of the Alternate Source Term (AST) analysis methodology for Oconee Nuclear Station (ONS) was submitted. This license amendment will support simplification of Ventilation System testing requirements during core alterations or movement of irradiated fuel. Duke Energy Corporation (Duke) received additional questions from the NRC related to the AST submittal. Responses to these questions were submitted on May 20, 2002, September 12, 2002, November 21, 2002 and January 27, 2003.

Penetration Room Ventilation System (PRVS) and Spent Fuel Pool Ventilation System (SFPVS) were removed from ONS Technical Specifications (TS) in the original submittal. After additional conversations with the NRC, Duke has committed to maintain these TS. However, the requirements of these TS will be relaxed as a result of the AST methodology. The TS for Control Room Ventilation System (CRVS) is being revised to add notes to the Completion Times for the CRVS TS conditions for one and two inoperable CRVS Booster Fan trains, respectively. The notes will allow for a one time additional completion time extension to implement the Control Room Intake/Booster Fan modification. Duke also intends to adopt TSTF-51 and the language associated with recently irradiated fuel to support the dose analysis assumption with respect to movement of irradiated fuel.

JUSTIFICATION FOR REQUEST:

The submitted dose analysis does not credit removal of radiological contaminants by the PRVS subsequent to a Loss Of Coolant Accident (LOCA) or Fuel Handling Accident (FHA) inside containment, or by the SFPVS in the spent fuel pool building. Because the analysis no longer credit PRVS and SFPVS, they no longer meet the criterion for inclusion in TS as defined in 10 CFR 50.36. Duke will retain the TS. However, since the accident analysis no longer credits the systems, the required actions and associated completion

times, the surveillance requirements and associated frequencies are being relaxed. For example, shutdown of a Unit is no longer appropriate when a train of ventilation cannot be returned to service within the specified allowed outage time.

Notes are being added to the Completion Times for the proposed CRVS TS conditions of one and two inoperable CRVS Booster Fan trains, respectively. The notes will allow for a one time additional completion time extension to implement the Control Room Intake/Booster Fan modification. This extension is acceptable based on the current knowledge and experience in control room habitability. The Completion Times specified in the proposed Required Actions recognize the low probability of an accident occurring during the time period when the boundary is degraded.

Duke also proposes to adopt TSTF-51 and the language associated with recently irradiated fuel to support the dose analysis assumption with respect to movement of irradiated fuel.

TSTF-51 removes the TS requirements for Engineered Safeguards (ESF) features to be operable after sufficient radioactive decay has occurred to ensure off-site doses remain below limits. Fuel movement could still proceed prior to the amount of decay occurring but only with the appropriate ESF systems operable. Associated with this change is the deletion of operability requirements during core alterations for ESF mitigation features. This change will allow ONS the flexibility to move personnel and equipment and perform work which could affect containment operability during the handling of irradiated fuel.

Following reactor shutdown, decay of the short-lived fission products greatly reduces the fission product inventory present in irradiated fuel. The proposed changes are based on performing analyses assuming a longer decay period to take advantage of the reduced radionuclide inventory available for release in the event of a FHA. Following sufficient decay occurring, the primary success path for mitigating the FHA no longer includes the functioning of the active containment systems. Therefore, the operability requirements of the TS are modified to reflect that water level and decay time are the primary success path for mitigating a FHA (which meets criterion 3).

To support this change in requirements during the handling of irradiated fuel, the operability requirements during core alterations for ESF mitigation features are deleted. The accidents postulated to occur during core alterations, in addition to fuel handling accidents, are: inadvertent criticality (due to a control rod removal error or continuous control rod withdrawal error during refueling or boron dilution) and the inadvertent loading of and subsequent operation with, a fuel assembly in an improper location. These events are not postulated to result in fuel cladding integrity damage. Since the only accident postulated to occur during core alterations that results in a significant radioactive release is the FHA, the proposed TS requirements omitting core alterations is justified.

Also, the TS only allow handling of irradiated fuel in the reactor vessel when the water level in the reactor cavity is at the high water level. Therefore, the proposed changes only affect containment requirements during periods of relatively low shutdown risk during refueling outages. Therefore, the proposed changes do not significantly increase the shutdown risk.

DESCRIPTION OF THE CHANGES:

TS 3.3.16, Reactor Building (RB) Purge Isolation - High Radiation

The APPLICABILITY is being revised to delete 'During Core Alterations' and add 'recently' to irradiated fuel assemblies.

REQUIRED ACTION (RA) A.2.1 to Suspend Core Alterations and the COMPLETION TIME of immediately is being deleted along with the logic tie 'and'.

RA A.2.2 is being renumbered to 'A.2' and 'recently' is being added to irradiated fuel assemblies.

The frequency for Surveillance Requirement (SR) 3.3.16.2 is being revised to perform the channel functional test on a frequency of once each refueling outage prior to movement of recently irradiated fuel assemblies within containment.

TS 3.7.9, Control Room Ventilation System (CRVS) Booster Fans

The APPLICABILITY is being revised to include 'During movement of recently irradiated fuel assemblies.'

A note is being added to Condition B that allows a one time extension of the COMPLETION TIME from 72 hours to 168 hours when entering the condition to facilitate the implementation of the control room intake/booster fan modification.

A note is being added to Condition C that allows a one time extension of the COMPLETION TIME from 24 hours to 72 hours when entering the condition to facilitate implementation of the control room intake/booster fan modification.

Condition D is being revised to specify MODES 1, 2, 3, or 4.

A new Condition E is being added to account for required actions and associated completion times not met during movement of recently irradiated fuel assemblies. Movement of recently irradiated fuel assemblies will be suspended immediately.

TS 3.7.10, Penetration Room Ventilation System (PRVS)

The Completion Time for Condition A is being revised from 7 days to 90 days.

Condition B will be revised to address the condition where two PRVS trains are inoperable or the Required Action and associated Completion Time for Condition A is not met, with the Required Actions to submit a report to the NRC outlining the plan for restoring the system to OPERABLE status within 30 days.

The frequency of SR 3.7.10.1 will be revised from 31 days to 6 months.

SR 3.7.10.4 will be revised to verify one PRVS train can maintain flow ≥ 800 cfm and ≤ 1200 cfm.

SR 3.7.10.5 will be deleted.

TS 3.7.16, Control Room Area Cooling Systems (CRACS)

The APPLICABILITY will be revised to include 'During movement of recently irradiated fuel assemblies.'

Condition D is being revised to specify Required Action and associated Completion Time not met in MODES 1, 2, 3, or 4.

Condition E is being revised to Condition F and MODES 1, 2, 3 or 4 are being specified for two of the CRVS and WC trains inoperable.

New Condition E is being added to account for required actions and associated completion times not met during movement of recently irradiated fuel assemblies. An OPERABLE CRACS train may be started or movement of recently irradiated fuel assemblies can be suspended.

New Condition G is being added to suspend movement of recently irradiated fuel assemblies if two trains of CRACS are inoperable during movement of recently irradiated fuel assemblies.

TS 3.7.17, Spent Fuel Pool Ventilation Systems (SFPVS)

NOTE 1 is being deleted from the LCO.

The APPLICABILITY of TS 3.7.17 is being revised to include 'recently irradiated' to fuel in the spent fuel pools.

Required Actions A.2.1 and A.2.2 are being deleted. The Completion Time of Condition A is being revised from Immediately to 90 days.

Required Action B.1.2 is being deleted and Required Action B.1.1 will be revised to B.1. Condition B is being revised to reflect that if two SFPVS trains are inoperable or the Required Action and associated Completion time for Condition A is not being met, then a report outlining the plan for restoring the system to OPERABLE status must be submitted to the NRC within 30 days.

The Completion Time for SR 3.7.17.1 is being revised from 31 days to 6 months.

TS 3.8.2, AC Sources - Shutdown

The APPLICABILITY, RA A.2.2, and RA B.2 of TS 3.8.2 is being revised to add 'recently' to irradiated fuel assemblies.

TS 3.8.4, DC Sources - Shutdown

The APPLICABILITY and RA A.2.2 of TS 3.8.4 is being revised to add 'recently' to irradiated fuel assemblies.

TS 3.8.7, Vital Inverters - Shutdown

The APPLICABILITY and RA A.2.2 of TS 3.8.7 is being revised to add 'recently' to irradiated fuel assemblies.

TS 3.8.9, Distribution Systems - Shutdown

The APPLICABILITY and RA A.2.2 of TS 3.8.9 is being revised to add 'recently' to irradiated fuel assemblies.

TS 3.9.3, Containment Penetrations

The proposed TS pages for TS 3.9.3, Containment Penetrations, submitted October 16, 2001 should be removed from the submittal and replaced with the proposed changes in this supplement. This supplement will leave containment closed during movement of recently irradiated fuel assemblies with the adoption of TSTF-51.

The APPLICABILITY, is being revised to include 'recently' irradiated fuel assemblies and to delete 'During CORE ALTERATIONS.'

REQUIRED ACTION A.1 and its associated COMPLETION TIME is being deleted. REQUIRED ACTION A.2 is being revised to A.1 and 'recently' is being added to irradiated fuel assemblies.

The FREQUENCY for SR 3.9.3.2 is being revised to include 'recently' irradiated fuel assemblies and to delete 'CORE ALTERATIONS OR.'

TS 3.9.6, Fuel Transfer Canal Water Level

The APPLICABILITY is being revised to delete 'During CORE ALTERATIONS, except during latching and unlatching of CONTROL ROD drive shafts'.

REQUIRED ACTION A.1, the completion time of 'immediately' and the logic tie 'and' is being deleted.

RA A.2 is being revised to 'A.1'.

TS 5.5, Programs and Manuals

The proposed TS pages for TS 5.5, Programs and Manuals, submitted October 16, 2001 should be removed from the submittal and replaced with the proposed changes in this supplement.

TS 5.5.2, Containment Leakage Rate Testing Program will be revised to reflect the maximum allowable containment leakage rate, L_a, at P_a shall be 0.20% of the containment air weight per day.

TS 5.5.12 has been revised to reflect that CRVS testing will be conducted at the frequencies specified in Regulatory Guide 1.52, Revision 2.

TS 5.5.12, Ventilation Filter Testing Program will be revised for the PRVS to demonstrate as follows:

a. A dioctyl phthalate (DOP) test of the high efficiency particulate air (HEPA) filter shows ≥ 90% removal when tested at the system design flow rate ±20%.

c. A halogenated hydrocarbon test of the carbon adsorber shows ≥90% removal at the system design flow rate ±20%.

e. A laboratory tests of a sample of the carbon adsorber shows ≥97.5% removal for CRVS Booster Fan Trains and a 90% removal for PRVS and SFPVS.

f. The pressure drop across the combined HEPA filters and carbon adsorber banks is < 6 in. of water at the nominal system flow rate for PRVS.

h. The DOP test for SFPVS is ≥90% removal when tested at the design flow rate ±20%.

i. The halogenated hydrocarbon test for SFPVS shows ≥90% removal when tested at the design flow rate ±20%.

TS 5.6, Reporting Requirements

TS 5.6.6, Post Accident Monitoring (PAM) and Main Feeder Bus Monitor Panel (MFPMP) Report will be revised to include the following requirements:

When a report is required by Condition H of LCO 3.7.9, "Control Room Ventilation System (CRVS) Booster Fans," a report shall be submitted within the following 90 days. The report shall outline the plan to return parameters to within normal values and any compensatory actions to be taken in the interim.

When a report is required by Condition B of LCO 3.7.10, "Penetration Room Ventilation System," or Condition B of LCO 3.7.17, "Spent Fuel Pool Ventilation System," a report shall be submitted within 30 days outlining the plan for restoring the system to OPERABLE status.

TS Bases 3.3.16, Reactor Building Purge Isolation - High Radiation

The 'APPLICABILITY' Section is being revised to delete CORE ALTERATIONS and to add 'recently' to irradiated fuel. The statement 'involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous 72 hours)' will be added to the description of fuel handling in MODES 5 and 6 in the APPLICABILITY section.

The 'ACTIONS' section is being revised to delete 'CORE ALTERATIONS' and to add 'recently' to irradiated fuel assemblies. The supporting information for the Completion Time of "Immediately" is being revised to add the statement 'involving handling recently irradiated fuel' following fuel handling accidents.

Surveillance Requirement (SR) 3.3.16.2 is being revised to delete 'CORE ALTERATIONS' and to add 'recently' to irradiated fuel assemblies.

TS BASES 3.7.9, Control Room Ventilation System

The "APPLICABILITY" section is being revised to include: During movement of recently irradiated fuel assemblies, the CRVS Booster Fan trains must be OPERABLE to cope with a release due to a fuel handling accident involving handling

recently irradiated fuel. Due to radioactive decay, CRVS is only required to mitigate fuel handling accidents involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous 72 hours).

Condition B requires with one CRVS Booster Fan train inoperable, actions must be taken to restore the train to OPERABLE status. A note will be added to the COMPLETION TIME that will allow for a one time extension of 96 hours for a total of 168 hours (7 days). The extension is based on the low probability of an accident occurring during this time period, and the ability of the remaining train to provide some dose reduction.

Condition C requires if two CRVS Booster Fan trains are inoperable, one of them must be restored to OPERABLE status within 24 hours. A note is being added to allow a one time extension of 48 hours for a total of 72 hours when supporting implementation of the control room intake/booster fan modification.

A new Condition E is being added to account for required actions and associated completion times not met during movement of recently irradiated fuel assemblies. Movement of recently irradiated fuel assemblies will be suspended immediately.

TS BASES 3.7.10, Penetration Room Ventilation System

The "APPLICABLE SAFETY ANALYSES" is being revised to reflect that PRVS is no longer credited in dose analysis calculations and is not required to meet 10 CFR 50.67 dose limits. PRVS no longer satisfies Criterion 3 of 10 CFR 50.36 and is only maintained for ALARA purposes.

ACTION A.1, is currently written to allow for 7 days to return an inoperable PRVS train to OPERABLE status.

RA A is being relaxed to allow for one PRVS train to be inoperable, such that with one train of PRVS inoperable, action must be taken to restore the PRVS train(s) to OPERABLE status within 90 days. This completion time is considered appropriate since the system is no longer credited in dose analysis calculations and is not required to maintain 10CFR50.67 dose limits.

ACTION B.1 - As currently written, would require shutdown of the plant within 36 hours if the required action of RA A.1 could not be met. This condition is extreme since the dose analysis no longer credits PRVS. The revised action requires if two PRVS trains are inoperable or the Required Action and associated Completion Time for Condition A are not met, that a report be submitted to the NRC within 30 days that outlines the plan for returning the system to an operable status.

The frequency of SR 3.7.10.1 is being revised from 31 days to 6 months. Operating experience indicates that the PRVS trains are reliable.

SR 3.7.10.4 originally establishes a vacuum criteria at 0.06 inches of water gauge to the atmosphere to ensure that a slight vacuum would continue to be maintained if wind speeds outside the building increased to 8.1 mph. However, UFSAR Section 6.5.1.3 states, "at a wind velocity of 8.1 mph, the improvement in X/Q compensates for the complete loss of filtering in the calculation of offsite dose". This requirement is excessive based on the UFSAR statement and the fact that the dose analysis no longer credits the PRVS. The surveillance has been revised to verify the flowrate of the system remains near its nominal value. This ensures that air turnover and filtration of the area contents is maintained for ALARA purposes. The test will be performed using a slightly greater tolerance than that previously used (800 to 1200 cfm rather than 900 to 1100 cfm). The tolerance is increased to limit the number of false negatives associated with instrument uncertainty. The increase in the upper end of the tolerance could result in a small reduction in the iodine removal efficiency whereas the decrease in the lower end could result in a small increase in the iodine removal efficiency. In general, the flow rate is not expected to vary greatly since the system is only operated during testing.

SR 3.7.10.5 - This surveillance was originally developed to verify that the charcoal filters would not overheat during certain scenarios. However, UFSAR Section 6.5.1.3 states, "Redundant fans, cross connected piping, and locked open filter inlet valves render incredible a loss of cooling air to the filters….even if air is lost through a filter….[the] charcoal ignition temperature will not be reached." For this reason, this surveillance has been eliminated.

10 CFR 50.67 and Dose Calculations were added to the list of References.

TS BASES 3.7.16 - Control Room Area Cooling System

The "APPLICABILITY" has been revised to include during movement of recently irradiated fuel assemblies (i.e., fuel that has occupied part of a critical reactor core within the previous 72 hours).

ACTIONS D.1 and D.2 were revised to specify Mode 1, 2, 3, or 4.

ACTION E.1 was revised to "F.1" and includes reference to Mode 1, 2, 3, or 4.

New ACTION E.1 was added as follows:

During movement of recently irradiated fuel, if the inoperable CRACS train cannot be restored to OPERABLE status within the required Completion Time, the OPERABLE CRACS train must be placed in operation immediately. This action ensures that the remaining train is OPERABLE, that no failures preventing actuation will occur, and that any active failure will be readily detected. An alternative to Required Action E.1 is to immediately suspend activities that could release radioactivity that might require the isolation of the control room. This places the unit in a condition that minimizes accident risk. This does not preclude the movement of fuel to a safe position.

New ACTION G.1 was added as follows:

G.1

During movement of recently irradiated fuel assemblies, with two CRACS trains inoperable, action must be taken to immediately suspend activities that could release radioactivity that might require isolation of the control room. This places the unit in a condition that minimizes accident risk. This does not preclude the movement of fuel to a safe position.

TS BASES 3.7.17, SFPVS

The 'APPLICABLE SAFETY ANALYSIS' is being revised to add reference to Regulatory Guide 1.183 and to the requirements of 10 CFR 50.67.

The 'LCO' is being revised to include the following:

With the adoption of the alternate source term and the installation of various plant modifications, SFPVS is not credited in dose analysis calculations. Therefore, there are no specific requirements for this system.

Revise #2 of equipment required for OPERABILITY to state filter trains are intact.

Delete the information concerning NOTE 1.

The 'APPLICABILITY' is being revised to reference 'recently irradiated' fuel and to specify that the SFPVS shall be OPERABLE or a plan established to return the system to OPERABLE status.

Action A.1 will be revised to reflect that if one SFPVS train is inoperable, it must be returned to service within 90 days. This is appropriate since the system is no longer credited in dose analysis calculations and is not required to maintain 10 CFR 50.67 limits.

Action B.1 will be revised to reflect with two trains of SFPVS inoperable or the Required Action and associated Completion Time for Condition A not met, a report must be submitted to the NRC outlining the plans for returning the system to an OPERABLE status within 30 days.

The Completion Time for SR 3.7.17.1 was revised from 31 days to 6 months. The system is no longer credited in dose analysis calculations and is not required to maintain 10 CFR 50.67 dose limits.

10 CFR 50.67 and Dose Calculations were added to the reference section.

TS BASES 3.8.2, AC Sources - Shutdown

The 'APPLICABLE SAFETY ANALYSIS' is being revised to add 'recently' to irradiated fuel assemblies and to add

'involving handling recently irradiated fuel. Due to radioactive decay, AC electrical power is only required to mitigate fuel handling accidents involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous 72 hours)' to letter c of the OPERABILITY section.

The 'LCO' will be revised to specify fuel handling accidents involving handling recently irradiated fuel.

The 'APPLICABILITY' section will be revised to include recently to irradiated fuel assemblies and to add to b. that fuel handling accident involves handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous 72 hours).

The 'ACTIONS A.1' will be revised to reflect 'recently irradiated' to fuel movement. ACTIONS A.2.1, etc will be revised to reflect 'recently' to irradiated fuel assemblies.

TS BASES 3.8.4, DC Sources - Shutdown

The 'APPLICABLE SAFETY ANALYSIS' will be revised to reflect 'recently' to irradiated fuel assemblies.

OPERABILITY, part c. will be revised to reflect 'involving handling recently irradiated fuel. Due to radioactive decay, DC electrical power is only required to mitigate fuel handling accidents involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous 72 hours).'

The 'LCO' will be revised to specify fuel handling accidents involving handling recently irradiated fuel.

The 'APPLICABILITY' section will be revised to include 'recently' to irradiated fuel assemblies and to add to part b. that fuel handling accident involves handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous 72 hours).

The 'ACTIONS A.1, A.2.1, etc' will be revised to reflect fuel movement involving handling recently irradiated fuel.

TS BASES 3.8.7, Vital Inverters - Shutdown

The 'APPLICABLE SAFETY ANALYSIS' will revise OPERABILITY, part c. to reflect 'involving handling recently irradiated fuel. Due to radioactive decay, the inverters are only required to mitigate fuel handling accidents involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous 72 hours).'

The 'APPLICABILITY' section will be revised to include 'recently' to irradiated fuel assemblies and to add to part b. that fuel handling accident involves handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous 72 hours).

The 'ACTIONS A.1, A.2.1, etc' will be revised to reflect fuel movement involving handling recently irradiated fuel.

TS BASES 3.8.9, Distribution Systems - Shutdown

The 'APPLICABLE SAFETY ANALYSIS' will revise OPERABILITY, part c. to reflect 'involving handling recently irradiated fuel. Due to radioactive decay, the AC, DC, and AC vital bus electrical power is only required to mitigate fuel handling accidents involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous 72 hours).'

The 'APPLICABILITY' section will be revised to include 'recently' to irradiated fuel assemblies and to add to part b. that fuel handling accident involves handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous 72 hours).

The 'ACTIONS A.1, A.2.1, etc' will be revised to reflect fuel movement involving handling recently irradiated fuel.

TS BASES 3.9.3, Containment Penetrations

The proposed TS BASES pages for TS 3.9.3, Containment Penetrations, submitted October 16, 2001 should be removed from the submittal and replaced with the proposed changes in this supplement. This supplement will leave containment closed during movement of recently irradiated fuel assemblies with the adoption of TSTF-51.

The BACKGROUND is being revised to delete references to 'CORE ALTERATIONS' and to include 'recently' irradiated

fuel assemblies. It will also clarify that a fuel handling accident and a fuel movement involves handling recently irradiated fuel.

The APPLICABLE SAFETY ANALYSIS is being revised to delete references to 'CORE ALTERATIONS' and to include 'recently' irradiated fuel assemblies. It will also clarify that a fuel handling accident involves handling recently irradiated fuel. The sentence beginning 'A minimum fuel transfer…' is being revised as follows: A minimum fuel transfer canal water level in conjunction with a decay time of 72 hours prior to irradiated fuel movement with containment closure capability or a minimum decay time of 72 hours without containment closure capability ensure that the release of fission product radioactivity subsequent to a fuel handling accident results in doses that are within the limits specified in 10 CFR 50.67.

The LCO is being revised to clarify that a fuel handling accident involves handling recently irradiated fuel.

The APPLICABILITY, is being revised to include 'recently' irradiated fuel assemblies and to delete references to 'CORE ALTERATIONS.' A statement is also being added to define 'recently irradiated' and to clarify dose results.

REQUIRED ACTION A.1 and its associated COMPLETION TIME is being deleted. REQUIRED ACTION A.2 is being revised to A.1, 'recently' is being added to irradiated fuel assemblies and 'CORE ALTERATIONS' is being deleted.

SURVEILLANCE REQUIREMENT (SR) 3.9.3.1 is being revised to clarify that a fuel handling accident involves handling recently irradiated fuel. It is also being revised to include 'recently' irradiated fuel assemblies and to delete references to 'CORE ALTERATIONS.' Fission product releases are being revised to clarify that the releases are significant.

SR 3.9.3.2 is being revised to include 'recently' irradiated fuel assemblies and to delete references to 'CORE ALTERATIONS.' It is also being revised to clarify that a fuel handling accident involves handling recently irradiated fuel.

TS BASES 3.9.6, Fuel Transfer Canal Water Level

The BACKGROUND is being revised to delete 'or performance of CORE ALTERATIONS, except during latching and unlatching of CONTROL ROD drive shafts,.'

The 'APPLICABLE SAFETY ANALYSIS' is being revised to delete 'During CORE ALTERATIONS.'

The 'APPLICABILITY' is being revised to remove 'during CORE ALTERATIONS, except during latching and unlatching of CONTROL ROD drive shafts, and'.

The 'ACTIONS' are being revised to delete 'CORE ALTERATIONS' and to delete RA A.2.

ATTACHMENT 4

NO SIGNIFICANT HAZARDS CONSIDERATION

ATTACHMENT 4

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS

Standards for determining whether a license amendment involves no significant hazards considerations are contained in 10CFR50.92(c). The TS changes and modifications as proposed in this LAR have been evaluated in accordance with 10 CFR 50.92 and determined not to involve any significant hazards considerations.

The proposed LAR includes (1) implementing the AST for accident analysis as described in Regulatory Guide 1.183; (2) relaxing the PRVS and the SFPVS TS because they are no longer credited for Control Room and off-site doses; (3) revising the CRVS to allow for a one time completion time extension on Conditions B and C when entering the conditions to support implementation of the Control Room intake/booster fan modification; (4) lowering the Reactor Building leakage rate from 0.25 w%/day to 0.20 w%/day; (5) revising the VFTP radioactive methyl iodide removal acceptance criterion for PRVS, SFPVS, and CRVS Booster Fan trains; and (6) adoption of TSTF-51.

Plant modifications are also being proposed in concert with the proposed TS changes. They include relocating the existing Control Room outside air intake from the roof of the Auxiliary Building to the roof of the Turbine Building and installing dual intakes for each Control Room; re-routing HPI/LPI relief valve discharge back into the Reactor Building and replacing the existing Caustic Addition system with a passive system.

As a result of this evaluation, Duke has concluded:

1) The proposed amendment will not involve a significant increase in the probability of consequences of an accident previously evaluated.

   The AST and those plant systems affected by implementing the proposed changes to the TS are not assumed to initiate design basis accidents. The AST does not affect the design or operations of the facility. Rather, the AST is used to evaluate the consequences of a postulated accident. The implementation of the AST has been evaluated in the revisions to the analysis of the design basis accidents for ONS. Based on the results of these

analyses, it has been demonstrated that, with the requested changes, the dose consequences of these events meet the acceptance criteria of 10 CFR 50.67 and Regulatory Guide 1.183. Therefore, the proposed amendment will not involve a significant increase in the probability or consequences of an accident previously evaluated.

2) The proposed amendment will not create the possibility of a new or different kind of accident from any accident previously evaluated.

The AST and those plant systems affected by implementing the proposed changes to the TS are not assumed to initiate design basis accidents. The systems affected by the changes are used to mitigate the consequences of an accident that has already occurred. The proposed TS changes and modifications do not significantly affect the mitigative function of these systems. Consequently, these systems do not alter the nature of events postulated in the Safety Analysis Report nor do they introduce any unique precursor mechanisms. Therefore, the proposed amendment will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3) The proposed amendment will not involve a significant reduction in the margin of safety.

The implementation of the AST, proposed changes to the TS and the implementation of the proposed modifications have been evaluated in the revisions to the analysis of the consequences of the design basis accidents for the ONS. Based on the results of these analyses, it has been demonstrated that with the requested changes the dose consequences of these events meet the acceptance criteria of 10 CFR 50.67 following the provisions of Regulatory Guide 1.183. Thus, the proposed amendment will not involve a significant reduction in the margin of safety.

ATTACHMENT 5
ECCS LEAKAGE

ATTACHMENT 5

Revised AST Dose Analyses to Address Allowable ECCS Leakage for the Control Program

Duke's October 16, 2001, submittal and May 20, 2002, response to a request for additional information (Request 5) describe a planned modification to route Letdown Storage Tank (LDST) and Low Pressure Injection (LPI) leakage to the Reactor Building Emergency Sump (RBES). The scope of this modification has changed from the scope described in the above submittals. A new drain line that contains remotely operated Motor Operated Valves (MOVs) is being installed from the outlet of the LDST to the RBES. The new LDST drain line will allow High Pressure Injection (HPI) pump minimum flow to be returned to the RBES via the LDST. The new LDST drain piping will be sized such that pressurization of the LDST to the point at which the LDST relief valve (HP-79) actuates will not occur; thus, eliminating the relief valve (HP-79) as a potential source of out leakage during Loss Of Coolant Accident (LOCA) events. A new design pressure for LPI system piping adjacent to the LPI thermal relief valves will be established. The LPI system re-rating will allow the setpoints of the relief valves to be increased to a higher actuation point such that relief valve actuation will not occur during certain LOCA scenarios. Preventing the actuation of these relief valves during LOCA events is necessary to prevent RBES inventory loss and excessive operator dose rates. While this reduces the potential for ECCS leakage into the auxiliary building post-accident, it only accounts for a portion of potential ECCS leakage. To ensure all potential leakage is addressed, Oconee has put in place a program, described in Technical Specification 5.5.3, for managing ECCS leakage, which includes the low pressure injection (LPI), high pressure injection (HPI), and reactor building spray (RBS) systems. It is recognized that ECCS leakage and control room unfiltered inleakage are both parameters that affect control room dose. Analyses are performed to support a method designed to couple the evaluation of control room dose for these parameters so that the control programs for the system performance can be designed using the margin tradeoff between these two parameters.

The selection of bounding values for the control room (CR) unfiltered inleakage assumed in the analyses provides Duke with margin to accommodate changes in input assumptions

that could be required to account for possible plant operational changes, such as increases in ECCS system leakage flow, imbalances in ventilation system flowrates, or reductions in filtration efficiencies. Duke has concluded that the appropriate input values for unfiltered inleakage as derived from the tracer gas test results should correspond to the nominal values determined from each of the testing programs. This conclusion is valid because the uncertainty values derived from the experimental results are within a reasonable range, as seen in the data set measurement results. Additionally, the measured nominal values for leakage during operation of the CR booster fan pressurization system are very low and much less than 100 cfm.

Sensitivity studies have shown that the dose prediction is most sensitive to the post-booster fan value (after 30 minutes into the accident). Therefore, to accommodate operational flexibility for ECCS system leakage, a range of values for unfiltered inleakage in the post-booster fan configuration are used. Post-booster fan inleakage values ranging from 40 cfm to 90 cfm are evaluated. This range of values provides margin above the 2001 tracer gas test results of 0 +/- 18 cfm inleakage for the Units 1&2 control room. A bounding value of 1150 cfm for the pre-booster fan flowrate will be retained.

In previous correspondence with the staff, Duke has stated that any airflow imbalance or other operational differences identified in post-modification testing of the dual control room air intakes will also be addressed in the analysis of the installed modification. To represent expected flow imbalance between the dual intakes, χ/Q values were calculated for a 55 / 45 flow imbalance, and are shown in the Table 1. If this imbalance split is not supported by post-modification ventilation system testing, the χ/Q values will be adjusted in the dose analyses.

The LBLOCA dose analysis has been performed assuming a 55 / 45 CR intake flow imbalance, and using a range of potential ECCS leakage values, with corresponding assumed control room unfiltered inleakage values that demonstrate doses within regulatory limits for a range of parameter combinations. A control room dose in the range of 4.5 rem TEDE was chosen for a target value to provide margin to the regulatory limit of 5.0 rem TEDE. Offsite doses for all cases remain well below the regulatory limit of 25 rem TEDE

for both EAB and LPZ locations. Table 2 shows the dose results of each case. The graph of ECCS leakage versus CR unfiltered inleakage shows the range of acceptable parameter combinations resulting in approximately 4.5 rem TEDE control room dose.

In the base case, these results demonstrate that up to 25 gallons per hour ECCS leakage is supported by the dose analysis using 40 cfm unfiltered inleakage to the control room, and resulting in acceptable doses to the public offsite and to control room operators. The ECCS program intention is to keep ECCS leakage as low as possible, but up to 25 gph is allowed based on the dose results. A program that controls total ECCS leakage to 25 gph is used as the limiting case with respect to offsite dose. For this case, 50 gph is assumed in the dose calculation in accordance with NRC guidance which states that a factor of two multiplier should be used to account for increased leakage in these systems over the duration of the accident and between surveillances or leakage checks.

For control room dose, a value of 40 cfm post-booster fan CR unfiltered inleakage will be used as the current licensing basis value based on the most recent tracer gas test results (performed in 2001). For the next tracer gas test planned in the CR Habitability Program, the ONS program for monitoring and controlling total ECCS leakage will determine the current measured total ECCS leakage in the system. This ECCS leakage value will be used to establish the post-booster fan actuation CR inleakage test criteria for the tracer gas test. For example, if total ECCS leakage is measured to be less than 10 gph, a tracer gas test criterion of 90 cfm for post-booster fan CR inleakage will be used. 1150 cfm will remain the pre-booster fan actuation CR unfiltered inleakage licensing basis value. As long as the CR inleakage test satisfies these tracer gas test criteria, CR inleakage and ECCS leakage performance is satisfactory and no past or current operability evaluation or reportability is required.

If the test value for CR unfiltered inleakage has changed, a new value of total ECCS leakage will be determined from the approved curve of total ECCS leakage versus CR unfiltered inleakage. This will apply until the subsequent CR test. The intention of both the CR Habitability and ECCS leakage control programs is to maintain leakage rates at low levels.

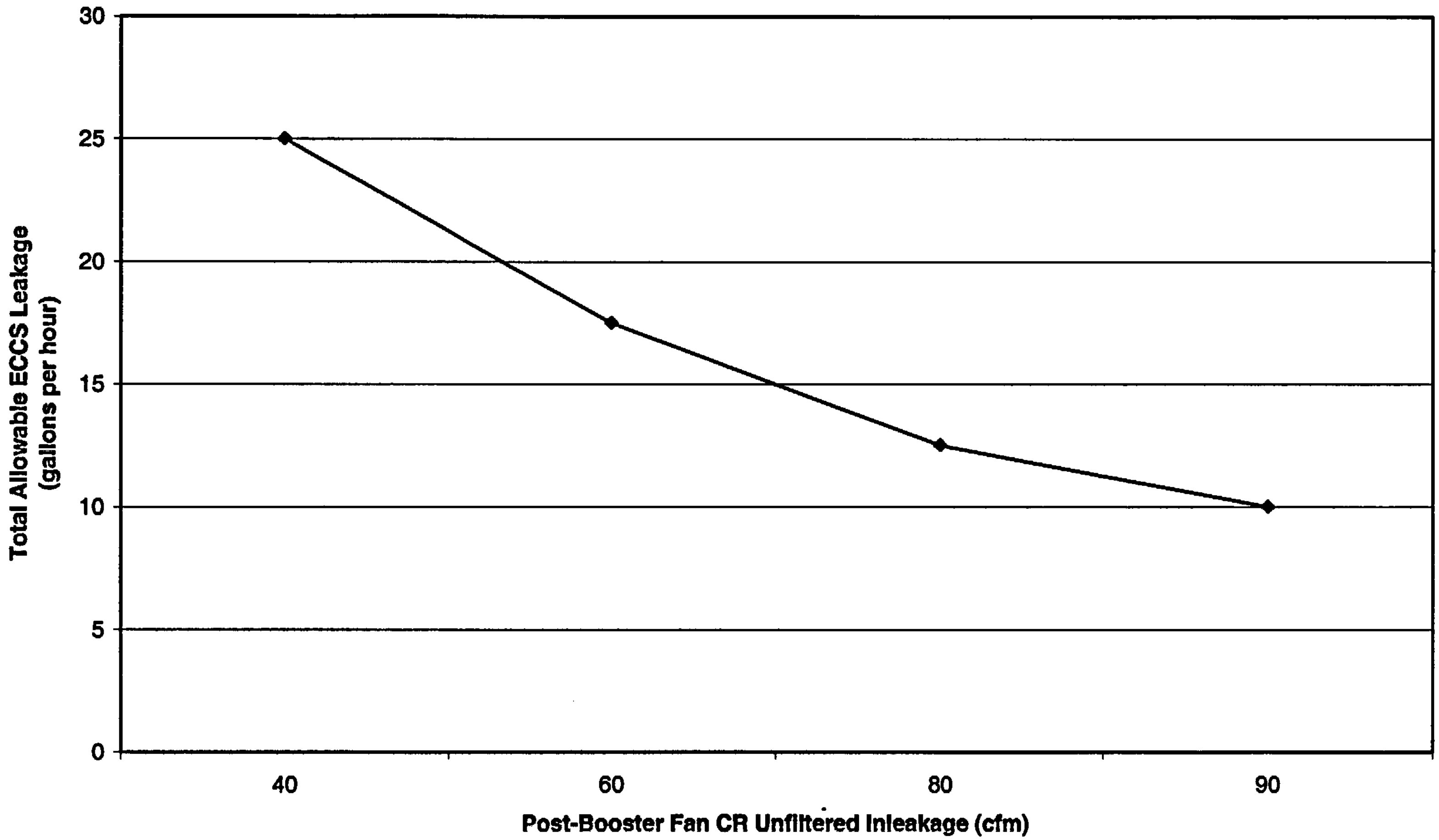
Table 1
χ/Q values (sec/m^3)
for 55 / 45 CR intake airflow imbalance

Vent Releases	
0 to 2 hr	4.79E-04
2 to 8 hr	3.40E-04
8 to 24 hr	1.40E-04
1 to 4 days	1.09E-04
4 to 30 days	8.86E-05
Equipment Hatch Releases	
0 to 2 hr	3.49E-04
2 to 8 hr	2.71E-04
8 to 24 hr	1.14E-04
1 to 4 days	8.58E-05
4 to 30 days	6.71E-05
BWST Releases	
0 to 2 hr	2.13E-04
2 to 8 hr	1.61E-04
8 to 24 hr	6.66E-05
1 to 4 days	5.19E-05
4 to 30 days	4.06E-05

Table 2
Dose Results

	Case 1 (Base)	Case 2	Case 3	Case 4
CR Unfiltered Inleakage (post-booster fan actuation) (cfm)	40 cfm	60 cfm	80 cfm	90 cfm
Total ECCS Leakage Used in the Dose Calculation (gallons/hour)	50 gph	35 gph	25 gph	20 gph
Total ECCS Leakage Allowable (gallons/hour) (see discussion in text)	25 gph	17.5 gph	12.5 gph	10 gph
EAB - Containment Model	8.7	8.7	8.7	8.7
EAB – RBES Model	3.1	2.2	1.6	1.2
Total EAB Dose (rem TEDE)	**11.8**	**10.9**	**10.2**	**9.9**
LPZ - Containment Model	1.6	1.6	1.6	1.6
LPZ – RBES Model	1.8	1.2	0.9	0.7
Total LPZ Dose (rem TEDE)	**3.3**	**2.8**	**2.5**	**2.3**
Control Room - Containment Model	1.3	1.6	1.9	2.1
Control Room - RBES Model	3.1	3.0	2.7	2.3
Total Control Room Dose (rem TEDE)	**4.4**	**4.6**	**4.6**	**4.4**

Total Allowable ECCS Leakage
Versus
Control Room Unfiltered Inleakage



Note: The plotted curve represents the pairs of parameter values that result in a computed dose to the CR operator of about 4.5 rem TEDE, where other parameters in the licensing calculation are held constant.