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SOUTHERN COMPANY
Energy to Serve Your World℠

February 13, 2007

Docket Nos.: 50-321
50-366

NL-07-0258

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

Edwin I. Hatch Nuclear Plant
Technical Specifications Revision to Allow Fuel Movement with
Refueling Interlocks Inoperable

Ladies and Gentlemen:

In accordance with the requirements of 10 CFR 50.90, Southern Nuclear Operating Company (SNC) proposes to revise the Plant Hatch Units 1 and 2 Technical Specifications (TS) to Operating License DPF-57 and NPF-5, respectively.

On September 2, 2003, SNC submitted a TS change proposal to allow in-vessel fuel movement with the refueling interlocks inoperable. The change was consistent with TSTF-225, Revision 2 and also contained a provision to decrease the frequency of the refueling interlock Channel Functional Test. As a result of mutual agreement, SNC withdrew the September 2 submittal, via a letter dated June 25, 2005.

This letter requests that same change without the decrease in the frequency of the refueling interlock Channel Functional Test. The proposed change is consistent with the current BWR/4 Standard Technical Specifications, NUREG-1433, Volume 1, Revision 3.0.

Enclosure 1 provides a description and justification of the proposed change. Enclosure 2 contains the 10 CFR 50.92 evaluation and the justification for the exclusion from performing an environmental evaluation. Enclosure 3 provides the marked-up and clean-typed TS and TS Bases changes.

In accordance with the requirement of 10 CFR 50.91, a copy of this letter and all applicable attachments will be sent to the designated state official of the Environmental Protection Division of the Georgia Department of Natural Resources.

Mr. L. M. Stinson states he is Vice President of the Southern Nuclear Operating Company and is authorized to execute the oath on behalf of Southern Nuclear Operating Company and to the best of his knowledge and belief, the statements set forth in this letter are true.

SNC requests this submittal be reviewed and approved no later than January 30, 2008. The proposed changes would be implemented within 30 days of issuance of the amendment.

This letter contains no NRC commitments. If you have any questions, please advise.

Respectfully submitted,

SOUTHERN NUCLEAR OPERATING COMPANY

L. M. Stinson
Vice President Fleet Operations Support

Sworn to and subscribed before me this 13th *day of* February, *2007.*

Gail A. Hicks
Notary Public

My commission expires: July 5, 2010

LMS/OCV/daj

Enclosures: Enclosure 1 - Description and Justification for Change
Enclosure 2 - No Significant Hazards Evaluation and Environmental Assessment
Enclosure 3 - Marked-up and Clean-typed Technical Specifications and Technical Specifications Bases Pages

cc: Southern Nuclear Operating Company
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U. S. Nuclear Regulatory Commission
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State of Georgia
Mr. L. C. Barrett, Commissioner – Department of Natural Resources

Enclosure 1

Edwin I. Hatch Nuclear Plant
Technical Specifications Revision to Allow Fuel Movement with
Inoperable Refueling Interlocks

Description and Justification for Change

Enclosure 1

Edwin I. Hatch Nuclear Plant
Technical Specifications Revision to Allow Fuel Movement with
Inoperable Refueling Interlocks

Description and Justification for Change

This is a proposed change to the Plant Hatch Units 1 and 2 Technical Specifications, Limiting Condition for Operation (LCO) 3.9.1, "Refueling Equipment Interlocks." Specifically, an alternate Required Action is being proposed if the refueling interlocks become inoperable. This new ACTION will safely permit continued fuel movement provided:

a) a continuous rod withdrawal block is inserted to replace the conditional rod block provided by the interlocks and,
b) all the control rods in the core are verified to be fully inserted.

These changes are based on Revision 2 of TSTF-225, and are completely consistent with Condition A of LCO 3.9.1 of the existing Standard BWR/4 Technical Specifications, NUREG 1433. Revision 2 of the TSTF also includes provisions to decrease the frequency of the channel functional test for the refueling interlocks (SR 3.9.1.1). This submittal does not request the change to the surveillance frequency.

The refueling interlocks are designed to restrict the operation of the refueling equipment or the withdrawal of control rods to reinforce unit procedures that prevent prompt reactivity excursions and that prevent the reactor from achieving criticality during refueling. The interlock circuitry senses the conditions of the refueling equipment and the position of the control rods. Depending on these conditions, the interlocks actuate to prevent the operation of the refueling equipment or the control rods.

There are three types of refueling interlocks:

1) those that prevent control rod motion by causing rod blocks,
2) those that prevent the refueling platform from traveling over the core and,
3) those that prevent hoist operation.

Briefly, the refueling interlocks will not allow fuel to be moved in or near the core unless all control rods are fully inserted. Additionally, they prevent the operation of loaded refueling equipment over the core when any control rod is withdrawn. The interlocks also prevent the withdrawal of any control rod when fuel is loaded on refueling equipment and operating over the core.

The refueling interlocks permit fuel movement to proceed without the need to have a control rod block in effect. Accordingly, the Plant Hatch Technical Specifications do not allow refueling to continue if the refueling interlocks are inoperable. However, there are alternate actions (fully insert all control rods and ensure a rod block is in affect) which will provide the same level of safety. The proposed change will allow the refueling

interlocks to be inoperable and fuel movement to continue if a continuous control rod withdrawal block is placed in effect, and all control rods are verified to be fully inserted. This will ensure that fuel loading will not occur with a control rod inappropriately withdrawn.

Actions are therefore proposed for LCO 3.9.1 to provide an alternate method for ensuring that the reactor remains shutdown during the refueling process if the refueling interlocks become inoperable.

The proposed ACTIONS are as follows:

- LCO ACTION 3.9.1.A.1 currently requires the suspension of fuel movements if a refueling interlock is inoperable. This remains unchanged.

- Proposed ACTION A.2.1 will state that, as an alternative to the suspension of fuel movements, a control rod block must be placed in effect.

- Proposed ACTION A.2.2 will require verification that all control rods are indeed fully inserted. This is in addition to the requirements to periodically verify the position of the control rods already in effect via Surveillance Requirement (SR) 3.9.3.1.

ACTIONS A.2.1 and A.2.2 also ensure that unacceptable operations are blocked (e.g., loading fuel into a cell with a withdrawn control rod).

This change allows Plant Hatch to continue to safely perform fuel movements in the vessel should the interlocks become inoperable for any reason.

These changes are consistent with the current BWR/4 Standard Technical Specifications (STS), NUREG-1433, Volume 1, Revision 3.0. In fact, the change to LCO 3.9.1 ACTION A is identical with the above referenced current STS. Additionally, the change to Bases ACTION A.1, A.2.1, and A.2.2 is identical to the wording in the current STS Bases, NUREG-1433, Volume 2, Revision 3.0.

Enclosure 2

Edwin I. Hatch Nuclear Plant
Technical Specifications Revision to Allow Fuel Movement with
Inoperable Refueling Interlocks

No Significant Hazards Evaluation and Environmental Assessment

Enclosure 2

Edwin I. Hatch Nuclear Plant
Technical Specifications Revision to Allow Fuel Movement with
Inoperable Refueling Interlocks

No Significant Hazards Evaluation and Environmental Assessment

Proposed Change

An alternate Required Action is being provided in LCO 3.9.1 if the refueling interlocks become inoperable. Currently, in-vessel fuel movement must be suspended if the refueling interlocks become inoperable. This ACTION is being preserved, but an alternate action is proposed which will allow continued fuel movement provided:

a) that a continuous rod block is inserted to replace the conditional rod block provided by the interlocks, and
b) that all control rods in the core are verified to be fully inserted.

10 CFR 50.92 Evaluation

In 10 CFR 50.92(c), the Nuclear Regulatory Commission (NRC) provides the following standards to be followed in determining the existence of a significant hazards consideration:

...a proposed amendment to an operating license for a facility licensed under 50.21(b) or 50.22, or for a testing facility, involves no significant hazards consideration if operation of the facility in accordance with the proposed amendment would not: (1) Involve a significant increase in the probability or consequences of an accident previously evaluated; or (2) Create the possibility of a new or different kind of accident from any accident previously evaluated; or (3) Involve a significant reduction in the margin of safety.

Southern Nuclear Operating Company (SNC) has reviewed the proposed amendment request and determined that its adoption does not involve a significant hazards consideration based upon the following discussion:

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

The proposed change provides additional actions for an inoperable refueling equipment interlock. The proposed actions will allow fuel movement with inoperable refueling interlocks, however, those actions will require the insertion of a continuous control rod withdrawal block, as well as verification that all control rods are fully inserted, before the commencement of fuel movement. Since fuel movement with the refueling interlocks operable allows control rod withdrawal under some circumstances, complete prevention of control rod withdrawal with the refueling interlocks inoperable does not increase the likelihood of a reactivity event, and may in fact decrease its probability of occurrence.

The refueling interlocks are not designed or otherwise intended to prevent or mitigate the consequences of the fuel handling accident. This proposed change does not involve those structures that could have an effect on the fuel handling accident and its consequences, such as the fuel design, the integrity of the refueling platform, and the integrity of the refueling mast and grapple. Furthermore, the consequences of the refueling accident are not increased since, should that accident occur while operating under the provisions of the alternate actions, all control rods will be fully inserted. The consequences of the fuel assembly insertion error event during refueling are not increased since this proposed change preserves the initial conditions of that transient event, i.e., all control rods inserted.

Implementing these changes will not increase the likelihood of an equipment failure resulting from the use of the refueling cranes and hoists. Such protection is afforded by other plant (owner controlled) specifications and procedures. These documents require testing and maintenance of these components separate from the requirements of LCO 3.9.1.

This submittal does not affect any other system, structure or component that is important with respect to the prevention and mitigation of other accidents or transients.

For the above reasons, this proposed Technical Specifications change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

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

The proposed change provides additional actions (the insertion of a control rod block and verification that all control rods are fully inserted) for inoperable refueling interlocks. This change does not involve any permanent alterations to plant systems or components. Nor does it involve changes to operational configurations or to the maintenance and testing of systems or components. Consequently, no new modes of operation are being introduced. Therefore, the change does not create the possibility of a new or different kind of accident from any previously evaluated.

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

The proposed change provides additional actions for an inoperable required refueling equipment interlock. The new actions will require that all control rods be fully inserted and that a control rod block be in effect. Under the current specifications, control rod withdrawal is allowed during fuel movement under certain conditions. The alternate actions of the proposed specifications will not allow rod withdrawal under any circumstances during fuel movement operations, therefore, this proposed change provides a level of safety at least equivalent to the existing actions.

Consequently, the change does not involve a significant reduction in the margin of safety.

Applicable Regulatory Requirements/Criteria

There are no specific regulatory requirements applicable to the refueling interlocks.

The refueling interlocks provide circuitry which, under certain conditions, initiate a control rod withdrawal block. The requirements of General Design Criteria 26 are applicable to the control rods.

Environmental Assessment

10 CFR 51.22(c)(9) provides criteria for the categorical exclusion from performing an environmental assessment. A proposed amendment to an operating license for a facility requires no environmental assessment if operation of the facility in accordance with the proposed license amendment will not:

1. *Involve a significant hazards consideration;*

2. *Result in a significant change in the types, or a significant increase in the amounts of any effluents that may be released off-site, or,*

3. *Result in a significant increase in individual or cumulative occupational radiation exposure.*

Southern Nuclear has evaluated the proposed changes and determined that the changes do not involve (1) a significant hazards consideration, (2) a significant change in the types or significant increase in the amounts of any effluents that may be released off-site, or (3) a significant increase in the individual or cumulative occupational exposure. Accordingly, the proposed changes meet the eligibility criteria for categorical exclusion set forth in 10 CFR 50.22(c)(9), and an environmental assessment of the proposed changes is not required.

Enclosure 3

Edwin I. Hatch Nuclear Plant
Technical Specifications Revision to Allow Fuel Movement with
Inoperable Refueling Interlocks

Marked-up and Clean-typed Technical Specifications and
Technical Specifications Bases Pages

(continued)

(continued)

3.9 REFUELING OPERATIONS

3.9.1 Refueling Equipment Interlocks

LCO 3.9.1 The refueling equipment interlocks shall be OPERABLE.

APPLICABILITY: During in-vessel fuel movement with equipment associated with the interlocks.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required refueling equipment interlocks inoperable.	A.1 Suspend in-vessel fuel movement with equipment associated with the inoperable interlock(s).	Immediately

ADD TS INSERT

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.1.1	Perform CHANNEL FUNCTIONAL TEST on each of the following required refueling equipment interlock inputs: a. All-rods-in, b. Refuel platform position, c. Refuel platform fuel grapple, fuel loaded, d. Refuel platform fuel grapple full-up position, e. Refuel platform frame-mounted hoist, fuel loaded, f. Refuel platform trolley-mounted hoist, fuel loaded, and g. Service platform hoist, fuel loaded	7 days

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(continued)

3.9 REFUELING OPERATIONS

3.9.1 Refueling Equipment Interlocks

LCO 3.9.1 The refueling equipment interlocks shall be OPERABLE.

APPLICABILITY: During in-vessel fuel movement with equipment associated with the interlocks.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required refueling equipment interlocks inoperable.	A.1 Suspend in-vessel fuel movement with equipment associated with the inoperable interlock(s).	Immediately

ADD TS INSERT

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.1.1	Perform CHANNEL FUNCTIONAL TEST on each of the following required refueling equipment interlock inputs: a. All-rods-in, b. Refuel platform position, c. Refuel platform fuel grapple, fuel loaded, d. Refuel platform fuel grapple full-up position, e. Refuel platform frame-mounted hoist, fuel loaded, f. Refuel platform trolley-mounted hoist, fuel loaded, and g. Service platform hoist, fuel loaded.	7 days

TS INSERT

OR

A.2.1	Insert a control rod withdrawal block	Immediately
	AND	
A.2.2	Verify all control rods are fully inserted.	Immediately

BASES (continued)

APPLICABILITY

In MODE 5, a prompt reactivity excursion could cause fuel damage and subsequent release of radioactive material to the environment. The refueling equipment interlocks protect against prompt reactivity excursions during MODE 5. The interlocks are required to be OPERABLE during in-vessel fuel movement with refueling equipment associated with the interlocks.

In MODES 1, 2, 3, and 4, the reactor pressure vessel head is on, and CORE ALTERATIONS are not possible. Therefore, the refueling interlocks are not required to be OPERABLE in these MODES.

, A.2.1, and A.2.2

ACTIONS

A.1

Therefore, Required Action A.1 requires that

With one or more of the required refueling equipment interlocks inoperable, the unit must be placed in a condition in which the LCO does not apply. In-vessel fuel movement with the affected refueling equipment must be immediately suspended. This action ensures that operations are not performed with equipment that would potentially not be blocked from unacceptable operations (e.g., loading fuel into a cell with a control rod withdrawn). Suspension of in-vessel fuel movement shall not preclude completion of movement of a component to a safe position.

i

Add B Insert

SURVEILLANCE REQUIREMENTS

SR 3.9.1.1

Performance of a CHANNEL FUNCTIONAL TEST demonstrates each required refueling equipment interlock will function properly when a simulated or actual signal indicative of a required condition is injected into the logic. The CHANNEL FUNCTIONAL TEST may be performed by any series of sequential, overlapping, or total channel steps so that the entire channel is tested.

The 7 day Frequency is based on engineering judgment and is considered adequate in view of other indications of refueling interlocks and their associated input status that are available to unit operations personnel.

(continued)

BASES (continued)

APPLICABILITY

In MODE 5, a prompt reactivity excursion could cause fuel damage and subsequent release of radioactive material to the environment. The refueling equipment interlocks protect against prompt reactivity excursions during MODE 5. The interlocks are required to be OPERABLE during in-vessel fuel movement with refueling equipment associated with the interlocks.

In MODES 1, 2, 3, and 4, the reactor pressure vessel head is on, and CORE ALTERATIONS are not possible. Therefore, the refueling interlocks are not required to be OPERABLE in these MODES.

, A.2.1, and A.2.2

ACTIONS

A.1

Therefore, Required Action A.1 requires that

With one or more of the required refueling equipment interlocks inoperable, the unit must be placed in a condition in which the LCO does not apply. In-vessel fuel movement with the affected refueling equipment must be immediately suspended. This action ensures that operations are not performed with equipment that would potentially not be blocked from unacceptable operations (e.g., loading fuel into a cell with a control rod withdrawn). Suspension of in-vessel fuel movement shall not preclude completion of movement of a component to a safe position.

i

Add B Insert

SURVEILLANCE REQUIREMENTS

SR 3.9.1.1

Performance of a CHANNEL FUNCTIONAL TEST demonstrates each required refueling equipment interlock will function properly when a simulated or actual signal indicative of a required condition is injected into the logic. The CHANNEL FUNCTIONAL TEST may be performed by any series of sequential, overlapping, or total channel steps so that the entire channel is tested.

The 7 day Frequency is based on engineering judgment and is considered adequate in view of other indications of refueling interlocks and their associated input status that are available to unit operations personnel.

(continued)

B INSERT

Alternatively, Required Actions A.2.1 and A.2.2 require a control rod withdrawal block to be inserted, and all control rods to be subsequently verified to be fully inserted. Required Action A.2.1 ensures no control rods can be withdrawn, because a block to control rod withdrawal is in place. The withdrawal block utilized must ensure that if rod withdrawal is requested, the rod will not respond (i.e., it will remain inserted). Required Action A.2.2 is performed after placing the rod withdrawal block in effect, and provides a verification that all control rods are fully inserted. This verification that all control rods are fully inserted is in addition to the periodic verification required by SR 3.9.3.1.

Like Required Action A.1, Required Actions A.2.1 and A.2.2 ensure unacceptable operations are blocked (e.g., loading fuel into a cell with the control rod withdrawn).

(continued)

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3.9 REFUELING OPERATIONS

3.9.1 Refueling Equipment Interlocks

LCO 3.9.1 The refueling equipment interlocks shall be OPERABLE.

APPLICABILITY: During in-vessel fuel movement with equipment associated with the interlocks.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required refueling equipment interlocks inoperable.	A.1 Suspend in-vessel fuel movement with equipment associated with the inoperable interlock(s).	Immediately
	OR	
	A.2.1 Insert a control rod withdrawal block.	Immediately
	AND	
	A.2.2 Verify all control rods are fully inserted.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.1.1	Perform CHANNEL FUNCTIONAL TEST on each of the following required refueling equipment interlock inputs: a. All-rods-in, b. Refuel platform position, c. Refuel platform fuel grapple, fuel loaded, d. Refuel platform fuel grapple full-up position, e. Refuel platform frame-mounted hoist, fuel loaded, f. Refuel platform trolley-mounted hoist, fuel loaded, and g. Service platform hoist, fuel loaded.	7 days

3.9 REFUELING OPERATIONS

3.9.2 Refuel Position One-Rod-Out Interlock

LCO 3.9.2 The refuel position one-rod-out interlock shall be OPERABLE.

APPLICABILITY: MODE 5 with the reactor mode switch in the refuel position and any control rod withdrawn.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Refuel position one-rod-out interlock inoperable.	A.1 Suspend control rod withdrawal. AND	Immediately
	A.2 Initiate action to fully insert all insertable control rods in core cells containing one or more fuel assemblies.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.2.1	Verify reactor mode switch locked in refuel position.	12 hours
SR 3.9.2.2	----------NOTE---------- Not required to be performed until 1 hour after any control rod is withdrawn. ---------- Perform CHANNEL FUNCTIONAL TEST.	7 days

3.9 REFUELING OPERATIONS

3.9.3 Control Rod Position

LCO 3.9.3 All control rods shall be fully inserted.

APPLICABILITY: When loading fuel assemblies into the core.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more control rods not fully inserted.	A.1 Suspend loading fuel assemblies into the core.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.3.1	Verify all control rods are fully inserted.	12 hours

3.9 REFUELING OPERATIONS

3.9.4 Control Rod Position Indication

LCO 3.9.4 The control rod full-in position indication channel for each control rod shall be OPERABLE.

APPLICABILITY: MODE 5.

ACTIONS

---NOTE---

Separate Condition entry is allowed for each required channel.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required control rod position indication channels inoperable.	A.1.1 Suspend in-vessel fuel movement.	Immediately
	AND	
	A.1.2 Suspend control rod withdrawal.	Immediately
	AND	
	A.1.3 Initiate action to fully insert all insertable control rods in core cells containing one or more fuel assemblies.	Immediately
	OR	
	A.2.1 Initiate action to fully insert the control rod associated with the inoperable position indicator.	Immediately
	AND	

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2.2 Initiate action to disarm the control rod drive associated with the fully inserted control rod.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.4.1	Verify the required channel has no full-in indication on each control rod that is not full-in.	Each time the control rod is withdrawn from the full-in position

3.9 REFUELING OPERATIONS

3.9.5 Control Rod OPERABILITY - Refueling

LCO 3.9.5 Each withdrawn control rod shall be OPERABLE.

APPLICABILITY: MODE 5.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more withdrawn control rods inoperable.	A.1 Initiate action to fully insert inoperable withdrawn control rods.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.5.1	----------NOTE---------- Not required to be performed until 7 days after the control rod is withdrawn. ---------- Insert each withdrawn control rod at least one notch.	7 days
SR 3.9.5.2	Verify each withdrawn control rod scram accumulator pressure is ≥ 940 psig.	7 days

3.9 REFUELING OPERATIONS

3.9.6 Reactor Pressure Vessel (RPV) Water Level

LCO 3.9.6 RPV water level shall be ≥ 23 ft above the top of the irradiated fuel assemblies seated within the RPV.

APPLICABILITY: During movement of irradiated fuel assemblies within the RPV,
During movement of new fuel assemblies or handling of control rods within the RPV, when irradiated fuel assemblies are seated within the RPV.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. RPV water level not within limit.	A.1 Suspend movement of fuel assemblies and handling of control rods within the RPV.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.6.1	Verify RPV water level is ≥ 23 ft above the top of the irradiated fuel assemblies seated within the RPV.	24 hours

3.9 REFUELING OPERATIONS

3.9.7 Residual Heat Removal (RHR) - High Water Level

LCO 3.9.7 One RHR shutdown cooling subsystem shall be OPERABLE and in operation.

---NOTE---
The required RHR shutdown cooling subsystem may be removed from operation for up to 2 hours per 8 hour period.

APPLICABILITY: MODE 5 with irradiated fuel in the reactor pressure vessel (RPV) and the water level ≥ 22 ft 1/8 inches above the top of the RPV flange.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Required RHR shutdown cooling subsystem inoperable.	A.1 Verify an alternate method of decay heat removal is available.	1 hour AND Once per 24 hours thereafter
B. Required Action and associated Completion Time of Condition A not met.	B.1 Suspend loading irradiated fuel assemblies into the RPV. AND B.2 Initiate action to restore secondary containment to OPERABLE status. AND	Immediately Immediately (continued)

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. (continued)	B.3	Initiate action to restore required standby gas treatment subsystem(s) to OPERABLE status.	Immediately
	AND		
	B.4	Initiate action to restore isolation capability in each required secondary containment penetration flow path not isolated.	Immediately
C. No RHR shutdown cooling subsystem in operation.	C.1	Verify reactor coolant circulation by an alternate method.	1 hour from discovery of no reactor coolant circulation AND Once per 12 hours thereafter
	AND		
	C.2	Monitor reactor coolant temperature.	Once per hour

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.7.1	Verify one RHR shutdown cooling subsystem is operating.	12 hours

3.9 REFUELING OPERATIONS

3.9.8 Residual Heat Removal (RHR) - Low Water Level

LCO 3.9.8 Two RHR shutdown cooling subsystems shall be OPERABLE, and one RHR shutdown cooling subsystem shall be in operation.

---NOTE---
The required operating shutdown cooling subsystem may be removed from operation for up to 2 hours per 8 hour period.

APPLICABILITY: MODE 5 with irradiated fuel in the reactor pressure vessel (RPV) and the water level < 22 ft 1/8 inches above the top of the RPV flange.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One or two required RHR shutdown cooling subsystems inoperable.	A.1	Verify an alternate method of decay heat removal is available for each inoperable required RHR shutdown cooling subsystem.	1 hour AND Once per 24 hours thereafter
B. Required Action and associated Completion Time of Condition A not met.	B.1	Initiate action to restore secondary containment to OPERABLE status.	Immediately
	AND		
	B.2	Initiate action to restore required standby gas treatment subsystem(s) to OPERABLE status.	Immediately
	AND		

(continued)

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. (continued)	B.3	Initiate action to restore isolation capability in each required secondary containment penetration flow path not isolated.	Immediately
C. No RHR shutdown cooling subsystem in operation.	C.1	Verify reactor coolant circulation by an alternate method.	1 hour from discovery of no reactor coolant circulation AND Once per 12 hours thereafter
	AND		
	C.2	Monitor reactor coolant temperature.	Once per hour

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.8.1	Verify one RHR shutdown cooling subsystem is operating.	12 hours

(continued)

3.9 REFUELING OPERATIONS

3.9.1 Refueling Equipment Interlocks

LCO 3.9.1 The refueling equipment interlocks shall be OPERABLE.

APPLICABILITY: During in-vessel fuel movement with equipment associated with the interlocks.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required refueling equipment interlocks inoperable.	A.1 Suspend in-vessel fuel movement with equipment associated with the inoperable interlock(s).	Immediately
	OR	
	A.2.1 Insert a control rod withdrawal block.	Immediately
	AND	
	A.2.2 Verify all control rods are fully inserted.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.1.1	Perform CHANNEL FUNCTIONAL TEST on each of the following required refueling equipment interlock inputs: a. All-rods-in, b. Refuel platform position, c. Refuel platform fuel grapple, fuel loaded, d. Refuel platform fuel grapple full-up position, e. Refuel platform frame-mounted hoist, fuel loaded, f. Refuel platform trolley-mounted hoist, fuel loaded, and g. Service platform hoist, fuel loaded.	7 days

3.9 REFUELING OPERATIONS

3.9.2 Refuel Position One-Rod-Out Interlock

LCO 3.9.2 The refuel position one-rod-out interlock shall be OPERABLE.

APPLICABILITY: MODE 5 with the reactor mode switch in the refuel position and any control rod withdrawn.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Refuel position one-rod-out interlock inoperable.	A.1 Suspend control rod withdrawal. AND	Immediately
	A.2 Initiate action to fully insert all insertable control rods in core cells containing one or more fuel assemblies.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.2.1	Verify reactor mode switch locked in refuel position.	12 hours
SR 3.9.2.2	----------NOTE---------- Not required to be performed until 1 hour after any control rod is withdrawn. ----------	
	Perform CHANNEL FUNCTIONAL TEST.	7 days

3.9 REFUELING OPERATIONS

3.9.3 Control Rod Position

LCO 3.9.3 All control rods shall be fully inserted.

APPLICABILITY: When loading fuel assemblies into the core.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more control rods not fully inserted.	A.1 Suspend loading fuel assemblies into the core.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.3.1	Verify all control rods are fully inserted.	12 hours

3.9 REFUELING OPERATIONS

3.9.4 Control Rod Position Indication

LCO 3.9.4 The control rod full-in position indication channel for each control rod shall be OPERABLE.

APPLICABILITY: MODE 5.

ACTIONS

---NOTE---
Separate Condition entry is allowed for each required channel.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required control rod position indication channels inoperable.	A.1.1 Suspend in-vessel fuel movement.	Immediately
	AND	
	A.1.2 Suspend control rod withdrawal.	Immediately
	AND	
	A.1.3 Initiate action to fully insert all insertable control rods in core cells containing one or more fuel assemblies.	Immediately
	OR	
	A.2.1 Initiate action to fully insert the control rod associated with the inoperable position indicator.	Immediately
	AND	

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2.2 Initiate action to disarm the control rod drive associated with the fully inserted control rod.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.4.1	Verify the required channel has no full-in indication on each control rod that is not full-in.	Each time the control rod is withdrawn from the full-in position

3.9 REFUELING OPERATIONS

3.9.5 Control Rod OPERABILITY - Refueling

LCO 3.9.5 Each withdrawn control rod shall be OPERABLE.

APPLICABILITY: MODE 5.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more withdrawn control rods inoperable.	A.1 Initiate action to fully insert inoperable withdrawn control rods.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.5.1	----------NOTE---------- Not required to be performed until 7 days after the control rod is withdrawn. ---------- Insert each withdrawn control rod at least one notch.	7 days
SR 3.9.5.2	Verify each withdrawn control rod scram accumulator pressure is ≥ 940 psig.	7 days

3.9 REFUELING OPERATIONS

3.9.6 Reactor Pressure Vessel (RPV) Water Level

LCO 3.9.6 RPV water level shall be ≥ 23 ft above the top of the irradiated fuel assemblies seated within the RPV.

APPLICABILITY: During movement of irradiated fuel assemblies within the RPV,
During movement of new fuel assemblies or handling of control rods within the RPV, when irradiated fuel assemblies are seated within the RPV.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. RPV water level not within limit.	A.1 Suspend movement of fuel assemblies and handling of control rods within the RPV.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.6.1	Verify RPV water level is ≥ 23 ft above the top of the irradiated fuel assemblies seated within the RPV.	24 hours

3.9 REFUELING OPERATIONS

3.9.7 Residual Heat Removal (RHR) - High Water Level

LCO 3.9.7 One RHR shutdown cooling subsystem shall be OPERABLE and in operation.

---NOTE---
The required RHR shutdown cooling subsystem may be removed from operation for up to 2 hours per 8 hour period.

APPLICABILITY: MODE 5 with irradiated fuel in the reactor pressure vessel (RPV) and the water level ≥ 22 ft 1/8 inches above the top of the RPV flange.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Required RHR shutdown cooling subsystem inoperable.	A.1 Verify an alternate method of decay heat removal is available.	1 hour AND Once per 24 hours thereafter
B. Required Action and associated Completion Time of Condition A not met.	B.1 Suspend loading irradiated fuel assemblies into the RPV. AND B.2 Initiate action to restore secondary containment to OPERABLE status. AND	Immediately Immediately (continued)

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. (continued)	B.3	Initiate action to restore required standby gas treatment subsystem(s) to OPERABLE status.	Immediately
	AND		
	B.4	Initiate action to restore isolation capability in each required secondary containment penetration flow path not isolated.	Immediately
C. No RHR shutdown cooling subsystem in operation.	C.1	Verify reactor coolant circulation by an alternate method.	1 hour from discovery of no reactor coolant circulation AND Once per 12 hours thereafter
	AND		
	C.2	Monitor reactor coolant temperature.	Once per hour

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.7.1	Verify one RHR shutdown cooling subsystem is operating.	12 hours

3.9 REFUELING OPERATIONS

3.9.8 Residual Heat Removal (RHR) - Low Water Level

LCO 3.9.8 Two RHR shutdown cooling subsystems shall be OPERABLE, and one RHR shutdown cooling subsystem shall be in operation.

---NOTE---
The required operating shutdown cooling subsystem may be removed from operation for up to 2 hours per 8 hour period.

APPLICABILITY: MODE 5 with irradiated fuel in the reactor pressure vessel (RPV) and the water level < 22 ft 1/8 inches above the top of the RPV flange.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One or two required RHR shutdown cooling subsystems inoperable.	A.1	Verify an alternate method of decay heat removal is available for each inoperable required RHR shutdown cooling subsystem.	1 hour AND Once per 24 hours thereafter
B. Required Action and associated Completion Time of Condition A not met.	B.1	Initiate action to restore secondary containment to OPERABLE status.	Immediately
	AND		
	B.2	Initiate action to restore required standby gas treatment subsystem(s) to OPERABLE status.	Immediately
	AND		

(continued)

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. (continued)	B.3	Initiate action to restore isolation capability in each required secondary containment penetration flow path not isolated.	Immediately
C. No RHR shutdown cooling subsystem in operation.	C.1	Verify reactor coolant circulation by an alternate method.	1 hour from discovery of no reactor coolant circulation AND Once per 12 hours thereafter
	AND		
	C.2	Monitor reactor coolant temperature.	Once per hour

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.8.1	Verify one RHR shutdown cooling subsystem is operating.	12 hours

BASES (continued)

APPLICABILITY

In MODE 5, a prompt reactivity excursion could cause fuel damage and subsequent release of radioactive material to the environment. The refueling equipment interlocks protect against prompt reactivity excursions during MODE 5. The interlocks are required to be OPERABLE during in-vessel fuel movement with refueling equipment associated with the interlocks.

In MODES 1, 2, 3, and 4, the reactor pressure vessel head is on, and CORE ALTERATIONS are not possible. Therefore, the refueling interlocks are not required to be OPERABLE in these MODES.

ACTIONS

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

With one or more of the required refueling equipment interlocks inoperable, the unit must be placed in a condition in which the LCO does not apply. Therefore, Required Action A.1 requires that in-vessel fuel movement with the affected refueling equipment must be immediately suspended. This action ensures that operations are not performed with equipment that would potentially not be blocked from unacceptable operations (e.g., loading fuel into a cell with a control rod withdrawn). Suspension of in-vessel fuel movement shall not preclude completion of movement of a component to a safe position.

Alternatively, Required Actions A.2.1 and A.2.2 require a control rod withdrawal block to be inserted, and all control rods to be subsequently verified to be fully inserted. Required Action A.2.1 ensures no control rods can be withdrawn, because a block to control rod withdrawal is in place. The withdrawal block utilized must ensure that if rod withdrawal is requested, the rod will not respond (i.e., it will remain inserted). Required Action A.2.2 is performed after placing the rod withdrawal block in effect, and provides a verification that all control rods are fully inserted. This verification that all control rods are fully inserted is in addition to the periodic verification required by SR 3.9.3.1.

Like Required Action A.1, Required Actions A.2.1 and A.2.2 ensure unacceptable operations are blocked (e.g., loading fuel into a cell with the control rod withdrawn).

(continued)

BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 3.9.1.1

Performance of a CHANNEL FUNCTIONAL TEST demonstrates each required refueling equipment interlock will function properly when a simulated or actual signal indicative of a required condition is injected into the logic. The CHANNEL FUNCTIONAL TEST may be performed by any series of sequential, overlapping, or total channel steps so that the entire channel is tested.

The 7 day Frequency is based on engineering judgment and is considered adequate in view of other indications of refueling interlocks and their associated input status that are available to unit operations personnel.

REFERENCES

1. 10 CFR 50, Appendix A, GDC 26.
2. FSAR, Section 7.6.3.
3. FSAR, Section 14.3.3.3.
4. FSAR, Section 14.3.3.4.
5. NRC No. 93-102, "Final Policy Statement on Technical Specification Improvements," July 23, 1993.

BASES (continued)

APPLICABILITY

In MODE 5, a prompt reactivity excursion could cause fuel damage and subsequent release of radioactive material to the environment. The refueling equipment interlocks protect against prompt reactivity excursions during MODE 5. The interlocks are required to be OPERABLE during in-vessel fuel movement with refueling equipment associated with the interlocks.

In MODES 1, 2, 3, and 4, the reactor pressure vessel head is on, and CORE ALTERATIONS are not possible. Therefore, the refueling interlocks are not required to be OPERABLE in these MODES.

ACTIONS

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

With one or more of the required refueling equipment interlocks inoperable, the unit must be placed in a condition in which the LCO does not apply. Therefore, Required Action A.1 requires that in-vessel fuel movement with the affected refueling equipment must be immediately suspended. This action ensures that operations are not performed with equipment that would potentially not be blocked from unacceptable operations (e.g., loading fuel into a cell with a control rod withdrawn). Suspension of in-vessel fuel movement shall not preclude completion of movement of a component to a safe position.

Alternatively, Required Actions A.2.1 and A.2.2 require a control rod withdrawal block to be inserted, and all control rods to be subsequently verified to be fully inserted. Required Action A.2.1 ensures no control rods can be withdrawn, because a block to control rod withdrawal is in place. The withdrawal block utilized must ensure that if rod withdrawal is requested, the rod will not respond (i.e., it will remain inserted). Required Action A.2.2 is performed after placing the rod withdrawal block in effect, and provides a verification that all control rods are fully inserted. This verification that all control rods are fully inserted is in addition to the periodic verification required by SR 3.9.3.1.

Like Required Action A.1, Required Actions A.2.1 and A.2.2 ensure unacceptable operations are blocked (e.g., loading fuel into a cell with the control rod withdrawn).

(continued)

BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 3.9.1.1

Performance of a CHANNEL FUNCTIONAL TEST demonstrates each required refueling equipment interlock will function properly when a simulated or actual signal indicative of a required condition is injected into the logic. The CHANNEL FUNCTIONAL TEST may be performed by any series of sequential, overlapping, or total channel steps so that the entire channel is tested.

The 7 day Frequency is based on engineering judgment and is considered adequate in view of other indications of refueling interlocks and their associated input status that are available to unit operations personnel.

REFERENCES

1. 10 CFR 50, Appendix A, GDC 26.
2. FSAR, Section 7.6.1.
3. FSAR, Section 15.1.13.
4. FSAR, Section 15.1.14.
5. NRC No. 93-102, "Final Policy Statement on Technical Specification Improvements," July 23, 1993.