



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**  
WASHINGTON, D.C. 20555-0001

April 14, 2016

Mr. C. R. Pierce  
Regulatory Affairs Director  
Southern Nuclear Operating Company, Inc.  
P. O. Box 1295, Bin - 1295  
Birmingham, AL 35201-1295

**SUBJECT: EDWIN I. HATCH NUCLEAR PLANT, UNIT NOS. 1 AND 2, ISSUANCE OF  
AMENDMENTS REGARDING MANAGING GAS ACCUMULATION  
(CAC NOS. MF5579 AND MF5580)**

Dear Mr. Pierce:

The Nuclear Regulatory Commission has issued the enclosed Amendment No. 278 to Renewed Facility Operating License DPR-57 and Amendment No. 222 to Renewed Facility Operating License NPF-5 for the Edwin I. Hatch Nuclear Plant, Unit Nos. 1 and 2, respectively. The amendments consist of changes to the Technical Specifications (TSs) in response to your application dated January 13, 2015, as supplemented by letters dated June 16 and November 24, 2015.

The amendments revise the TS requirements related to Generic Letter 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray systems," as described in TSTF-523, Revision 2, "Generic Letter 2008-01, Managing Gas Accumulation." Specifically, the changes revise or add Surveillance Requirements to verify that the system locations susceptible to gas accumulation are sufficiently filled with water and to provide allowances which permit performance of the verification.

C. R. Pierce

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A copy of the related Safety Evaluation is also enclosed. A Notice of Issuance will be included in the Commission's biweekly *Federal Register* notice.

Sincerely,

A handwritten signature in black ink, appearing to read "Michael Orenak". The signature is fluid and cursive, with the first name "Michael" and last name "Orenak" clearly distinguishable.

Michael Orenak, Project Manager  
Plant Licensing Branch II-1  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket Nos. 50-321 and 50-366

Enclosures:

1. Amendment No. 278 to DPR-57
2. Amendment No. 222 to NPF-5
3. Safety Evaluation

cc w/encls: Distribution via Listserv



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

SOUTHERN NUCLEAR OPERATING COMPANY, INC.

GEORGIA POWER COMPANY

OGLETHORPE POWER CORPORATION

MUNICIPAL ELECTRIC AUTHORITY OF GEORGIA

CITY OF DALTON, GEORGIA

DOCKET NO. 50-321

EDWIN I. HATCH NUCLEAR PLANT, UNIT NO. 1

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 278  
Renewed License No. DPR-57

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment to the Edwin I. Hatch Nuclear Plant, Unit No. 1 (the facility) Renewed Facility Operating License No. DPR-57 filed by Southern Nuclear Operating Company, Inc. (the licensee), acting for itself, Georgia Power Company, Oglethorpe Power Corporation, Municipal Electric Authority of Georgia, and City of Dalton, Georgia (the owners), dated January 13, 2015, as supplemented by letters dated June 16 and November 24, 2015, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations as set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
  - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations set forth in 10 CFR Chapter I;
  - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
  - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

Enclosure 1

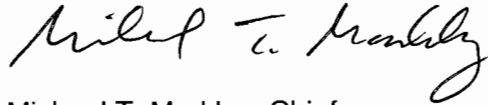
2. Accordingly, the license is hereby amended by page changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Renewed Facility Operating License No. DPR-57 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A and the Environmental Protection Plan contained in Appendix B, as revised through Amendment No. 278, are hereby incorporated in the license. Southern Nuclear shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of its date of issuance and shall be implemented within 120 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Michael T. Markley, Chief  
Plant Licensing Branch II-1  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to Renewed Facility  
Operating License No. DPR-57  
and the Technical Specifications

Date of Issuance: April 14, 2016



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001**

SOUTHERN NUCLEAR OPERATING COMPANY, INC.

GEORGIA POWER COMPANY

OGLETHORPE POWER CORPORATION

MUNICIPAL ELECTRIC AUTHORITY OF GEORGIA

CITY OF DALTON, GEORGIA

DOCKET NO. 50-366

EDWIN I. HATCH NUCLEAR PLANT, UNIT NO. 2

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 222  
Renewed License No. NPF-5

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment to the Edwin I. Hatch Nuclear Plant, Unit No. 2 (the facility) Renewed Facility Operating License No. NPF-5 filed by Southern Nuclear Operating Company, Inc. (the licensee), acting for itself, Georgia Power Company, Oglethorpe Power Corporation, Municipal Electric Authority of Georgia, and City of Dalton, Georgia (the owners), dated January 13, 2015, as supplemented by letters dated June 16 and November 24, 2015, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations as set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
  - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations set forth in 10 CFR Chapter I;
  - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
  - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

Enclosure 2

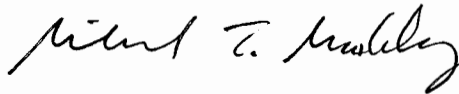
2. Accordingly, the license is hereby amended by page changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Renewed Facility Operating License No. NPF-5 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A and the Environmental Protection Plan contained in Appendix B, as revised through Amendment No. 222, are hereby incorporated in the license. Southern Nuclear shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of its date of issuance and shall be implemented within 120 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Michael T. Markley, Chief  
Plant Licensing Branch II-1  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to Renewed Facility  
Operating License No. NPF-5  
and the Technical Specifications

Date of Issuance: April 14, 2016

ATTACHMENT TO LICENSE AMENDMENT NO. 278  
RENEWED FACILITY OPERATING LICENSE NO. DPR-57  
DOCKET NO. 50-321  
AND ATTACHMENT TO LICENSE AMENDMENT NO. 222  
RENEWED FACILITY OPERATING LICENSE NO. NPF-5  
DOCKET NO. 50-366

Replace the following pages of the License and the Appendix A Technical Specifications (TSs) with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Remove Pages

License for DPR-57

4

TSs for DPR-57

3.4-15  
3.4-17  
3.5-3  
3.5-8  
3.5-10  
3.6-26  
3.6-28  
3.6-30  
3.9-10  
3.9-12

License for NPF-5

4

TSs for NPF-5

3.4-15  
3.4-17  
3.5-3  
3.5-9  
3.5-11  
3.6-26  
3.6-28  
3.6-30  
3.9-11  
3.9-13

Insert Pages

License for DPR-57

4

TSs for DPR-57

3.4-15  
3.4-17  
3.5-3  
3.5-8  
3.5-10  
3.6-26  
3.6-28  
3.6-30  
3.9-10  
3.9-12

License for NPF-5

4

TSs for NPF-5

3.4-15  
3.4-17  
3.5-3  
3.5-9  
3.5-11  
3.6-26  
3.6-28  
3.6-30  
3.9-11  
3.9-13

for sample analysis or instrumentation calibration, or associated with radioactive apparatus or components;

- (6) Southern Nuclear, pursuant to the Act and 10 CFR Parts 30 and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility.
- (C) This renewed license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations in 10 CFR Chapter I; Part 20, Section 30.34 of Part 30, Section 40.41 of Part 40, Section 50.54 of Part 50, and Section 70.32 of Part 70; all applicable provisions of the Act and the rules, regulations, and orders of the Commission now or hereafter in effect; and the additional conditions specified or incorporated below:

- (1) Maximum Power Level

Southern Nuclear is authorized to operate the facility at steady state reactor core power levels not in excess of 2804 megawatts thermal.

- (2) Technical Specifications

The Technical Specifications (Appendix A) and the Environmental Plan (Appendix B), as revised through Amendment No. 278 are hereby incorporated in the renewed license. Southern Nuclear shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

The Surveillance Requirement (SR) contained in the Technical Specifications and listed below, is not required to be performed immediately upon implementation of Amendment No. 195. The SR listed below shall be successfully demonstrated before the time and condition specified:

SR 3.8.1.18 shall be successfully demonstrated at its next regularly scheduled performance.

- (3) Fire Protection

Southern Nuclear shall implement and maintain in effect all provisions of the fire protection program, which is referenced in the Updated Final Safety Analysis Report for the facility, as contained in the updated Fire Hazards Analysis and Fire Protection Program for the Edwin I. Hatch Nuclear Plant, Units 1 and 2, which was originally submitted by letter dated July 22, 1986. Southern Nuclear may make changes to the fire protection program without prior Commission approval only if the changes



- (6) Southern Nuclear, pursuant to the Act and 10 CFR Parts 30 and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility.
- (C) This renewed license shall be deemed to contain, and is subject to, the conditions specified in the following Commission regulations in 10 CFR Chapter I: Part 20, Section 30.34 of Part 30, Section 40.41 of Part 40, Section 50.54 of Part 50, and Section 70.32 of Part 70; all applicable provisions of the Act and the rules, regulations, and orders of the Commission now or hereafter in effect; and the additional conditions<sup>2</sup> specified or incorporated below:

(1) Maximum Power Level

Southern Nuclear is authorized to operate the facility at steady state reactor core power levels not in excess of 2,804 megawatts thermal, in accordance with the conditions specified herein.

(2) Technical Specifications

The Technical Specifications (Appendix A) and the Environmental Protection Plan (Appendix B); as revised through Amendment No. 222 are hereby incorporated in the renewed license. Southern Nuclear shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

(3) Additional Conditions

The matters specified in the following conditions shall be completed to the satisfaction of the Commission within the stated time periods following the issuance of the renewed license or within the operational restrictions indicated. The removal of these conditions shall be made by an amendment to the license supported by a favorable evaluation by the Commission.

(a) Fire Protection

Southern Nuclear shall implement and maintain in effect all provisions of the fire protection program, which is referenced in the Updated Final Safety Analysis Report for the facility, as contained

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<sup>2</sup> The original licensee authorized to possess, use, and operate the facility with Georgia Power Company (GPC). Consequently, certain historical references to GPC remain in certain license conditions.

RHR Shutdown Cooling System - Hot Shutdown  
3.4.7

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.7.1	<p style="text-align: center;"><u>NOTE</u></p> <p>Not required to be met until 2 hours after reactor steam dome pressure is less than the RHR low pressure permissive pressure.</p> <hr/> <p>Verify one RHR shutdown cooling subsystem or recirculation pump is operating.</p>	In accordance with the Surveillance Frequency Control Program
SR 3.4.7.2	<p style="text-align: center;"><u>NOTES</u></p> <ol style="list-style-type: none"> <li>1. Not required to be performed until 12 hours after reactor steam dome pressure is less than the RHR low pressure permissive pressure.</li> <li>2. An operating RHR shutdown cooling subsystem will meet this requirement for the RHR shutdown cooling subsystem running unless the RHR shutdown cooling subsystem is in a low flow system operation.</li> </ol> <hr/> <p>Verify required RHR shutdown cooling subsystem locations susceptible to gas accumulation are sufficiently filled with water.</p>	In accordance with the Surveillance Frequency Control Program

RHR Shutdown Cooling System - Cold Shutdown  
3.4.8

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. No RHR shutdown cooling subsystem in operation.  <u>AND</u>  No recirculation pump in operation.	B.1 Verify reactor coolant circulation by an alternate method.	1 hour from discovery of no reactor coolant circulation
	<u>AND</u>	<u>AND</u>
	B.2 Monitor reactor coolant temperature.	Once per 12 hours thereafter  Once per hour

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.4.8.1      Verify one RHR shutdown cooling subsystem or recirculation pump is operating.	In accordance with the Surveillance Frequency Control Program
SR 3.4.8.2 <u>NOTE</u> An operating RHR shutdown cooling subsystem will meet this requirement for the RHR shutdown cooling subsystem running unless the RHR shutdown cooling subsystem is in a low flow system operation.  Verify required RHR shutdown cooling subsystem locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.1.1	Verify, for each ECCS injection/spray subsystem, locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program
SR 3.5.1.2	<p>-----NOTES-----</p> <ol style="list-style-type: none"> <li>Low pressure coolant injection (LPCI) subsystems may be considered OPERABLE during alignment and operation for decay heat removal with reactor steam dome pressure less than the Residual Heat Removal (RHR) low pressure permissive pressure in MODE 3, if capable of being manually realigned and not otherwise inoperable.</li> <li>Not required to be met for system vent flowpaths opened under administrative control.</li> </ol> <p>Verify each ECCS injection/spray subsystem manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.</p>	In accordance with the Surveillance Frequency Control Program
SR 3.5.1.3	Verify ADS air supply header pressure is $\geq 90$ psig.	In accordance with the Surveillance Frequency Control Program
SR 3.5.1.4	Verify the RHR System cross tie valve is closed and power is removed from the valve operator.	In accordance with the Surveillance Frequency Control Program
SR 3.5.1.5	(Not used.)	

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE				FREQUENCY												
SR 3.5.2.3	Verify, for each required ECCS injection/spray subsystem, locations susceptible to gas accumulation are sufficiently filled with water.			In accordance with the Surveillance Frequency Control Program												
SR 3.5.2.4	<div>-----NOTES-----</div> <div><div>1. One LPCI subsystem may be considered OPERABLE during alignment and operation for decay heat removal if capable of being manually realigned and not otherwise inoperable.</div><div>2. Not required to be met for system vent flowpaths opened under administrative control.</div></div> <div>-----</div> <div>Verify each required ECCS injection/spray subsystem manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.</div>			In accordance with the Surveillance Frequency Control Program												
SR 3.5.2.5	<div>Verify each required ECCS pump develops the specified flow rate against a system head corresponding to the specified reactor pressure.</div> <table><thead><tr><th>SYSTEM</th><th>FLOW RATE</th><th>NO. OF PUMPS</th><th>SYSTEM HEAD CORRESPONDING TO A REACTOR PRESSURE OF</th></tr></thead><tbody><tr><td>CS</td><td>≥ 4250 gpm</td><td>1</td><td>≥ 113 psig</td></tr><tr><td>LPCI</td><td>≥ 7700 gpm</td><td>1</td><td>≥ 20 psig</td></tr></tbody></table>			SYSTEM	FLOW RATE	NO. OF PUMPS	SYSTEM HEAD CORRESPONDING TO A REACTOR PRESSURE OF	CS	≥ 4250 gpm	1	≥ 113 psig	LPCI	≥ 7700 gpm	1	≥ 20 psig	In accordance with the Inservice Testing Program
SYSTEM	FLOW RATE	NO. OF PUMPS	SYSTEM HEAD CORRESPONDING TO A REACTOR PRESSURE OF													
CS	≥ 4250 gpm	1	≥ 113 psig													
LPCI	≥ 7700 gpm	1	≥ 20 psig													
SR 3.5.2.6	<div>-----NOTE-----</div> <div>Vessel injection/spray may be excluded.</div> <div>-----</div> <div>Verify each required ECCS injection/spray subsystem actuates on an actual or simulated automatic initiation signal.</div>			In accordance with the Surveillance Frequency Control Program												

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE		FREQUENCY
SR 3.5.3.1	Verify the RCIC System locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program
SR 3.5.3.2	<p>-----NOTE-----</p> <p>Not required to be met for system vent flow paths opened under administrative control.</p> <p>-----</p> <p>Verify each RCIC System manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.</p>	In accordance with the Surveillance Frequency Control Program
SR 3.5.3.3	<p>-----NOTE-----</p> <p>Not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test.</p> <p>-----</p> <p>Verify, with reactor pressure <math>\leq 1058</math> psig and <math>\geq 920</math> psig, the RCIC pump can develop a flow rate <math>\geq 400</math> gpm against a system head corresponding to reactor pressure.</p>	In accordance with the Surveillance Frequency Control Program
SR 3.5.3.4	<p>-----NOTE-----</p> <p>Not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test.</p> <p>-----</p> <p>Verify, with reactor pressure <math>\leq 165</math> psig, the RCIC pump can develop a flow rate <math>\geq 400</math> gpm against a system head corresponding to reactor pressure.</p>	In accordance with the Surveillance Frequency Control Program
SR 3.5.3.5	<p>-----NOTE-----</p> <p>Vessel injection may be excluded.</p> <p>-----</p> <p>Verify the RCIC System actuates on an actual or simulated automatic initiation signal.</p>	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.2.3.2	Verify RHR suppression pool cooling subsystem locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program
SR 3.6.2.3.3	Verify each required RHR pump develops a flow rate $\geq 7700$ gpm through the associated heat exchanger while operating in the suppression pool cooling mode.	In accordance with the Inservice Testing Program

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.2.4.2	Verify RHR suppression pool spray subsystem locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program
SR 3.6.2.4.3	Verify each suppression pool spray nozzle is unobstructed.	In accordance with the Surveillance Frequency Control Program



SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.2.5.2	Verify RHR drywell spray subsystem locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program
SR 3.6.2.5.3	Verify each drywell spray nozzle is unobstructed.	Following maintenance which could result in nozzle blockage.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. (continued)	B.3 Initiate action to restore required standby gas treatment subsystem(s) to OPERABLE status.	Immediately
	<u>AND</u> 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
	<u>AND</u> C.2 Monitor reactor coolant temperature.	<u>AND</u> Once per 12 hours thereafter  Once per hour

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.7.1	Verify one RHR shutdown cooling subsystem is operating.	In accordance with the Surveillance Frequency Control Program
SR 3.9.7.2	<p style="text-align: center;"><u>NOTE</u></p> <p>An operating RHR shutdown cooling subsystem will meet this requirement for the RHR shutdown cooling subsystem running unless the RHR shutdown cooling subsystem is in a low flow system operation.</p> <p>Verify required RHR shutdown cooling subsystem locations susceptible to gas accumulation are sufficiently filled with water.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

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.  <u>AND</u> C.2 Monitor reactor coolant temperature.	1 hour from discovery of no reactor coolant circulation  <u>AND</u> Once per 12 hours thereafter  Once per hour

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.8.1	Verify one RHR shutdown cooling subsystem is operating.	In accordance with the Surveillance Frequency Control Program
SR 3.9.8.2	<p style="text-align: center;"><u>NOTE</u></p> <p>An operating RHR shutdown cooling subsystem will meet this requirement for the RHR shutdown cooling subsystem running unless the RHR shutdown cooling subsystem is in a low flow system operation.</p> <p>Verify required RHR shutdown cooling subsystem locations susceptible to gas accumulation are sufficiently filled with water.</p>	In accordance with the Surveillance Frequency Control Program

RHR Shutdown Cooling System - Hot Shutdown  
3.4.7

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.4.7.1</p> <hr/> <p style="text-align: center;">NOTE</p> <hr/> <p>Not required to be met until 2 hours after reactor steam dome pressure is less than the RHR low pressure permissive pressure.</p> <hr/> <p>Verify one RHR shutdown cooling subsystem or recirculation pump is operating.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.4.7.2</p> <hr/> <p style="text-align: center;">NOTES</p> <hr/> <p>1. Not required to be performed until 12 hours after reactor steam dome pressure is less than the RHR low pressure permissive pressure.</p> <p>2. An operating RHR shutdown cooling subsystem will meet this requirement for the RHR shutdown cooling subsystem running unless the RHR shutdown cooling subsystem is in a low flow system operation.</p> <hr/> <p>Verify required RHR shutdown cooling subsystem locations susceptible to gas accumulation are sufficiently filled with water.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

RHR Shutdown Cooling System - Cold Shutdown  
3.4.8

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. No RHR shutdown cooling subsystem in operation.  <u>AND</u>  No recirculation pump in operation.	B.1 Verify reactor coolant circulation by an alternate method.	1 hour from discovery of no reactor coolant circulation
	<u>AND</u>	<u>AND</u>
	B.2 Monitor reactor coolant temperature.	Once per 12 hours thereafter  Once per hour

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.8.1	Verify one RHR shutdown cooling subsystem or recirculation pump is operating.	In accordance with the Surveillance Frequency Control Program
SR 3.4.8.2	<p style="text-align: center;"><u>NOTE</u></p> <p>An operating RHR shutdown cooling subsystem will meet this requirement for the RHR shutdown cooling subsystem running unless the RHR shutdown cooling subsystem is in a low flow system operation.</p> <p>Verify required RHR shutdown cooling subsystem locations susceptible to gas accumulation are sufficiently filled with water.</p>	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.1.1	Verify, for each ECCS injection/spray subsystem, locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program
SR 3.5.1.2	<p>-----NOTES-----</p> <ol style="list-style-type: none"> <li>Low pressure coolant injection (LPCI) subsystems may be considered OPERABLE during alignment and operation for decay heat removal with reactor steam dome pressure less than the Residual Heat Removal (RHR) low pressure permissive pressure in MODE 3, if capable of being manually realigned and not otherwise inoperable.</li> <li>Not required to be met for system vent flowpaths opened under administrative control.</li> </ol> <p>-----</p> <p>Verify each ECCS injection/spray subsystem manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.</p>	In accordance with the Surveillance Frequency Control Program
SR 3.5.1.3	Verify ADS air supply header pressure is $\geq 90$ psig.	In accordance with the Surveillance Frequency Control Program
SR 3.5.1.4	Verify the RHR System cross tie valve is closed and power is removed from the valve operator.	In accordance with the Surveillance Frequency Control Program
SR 3.5.1.5	(Not used.)	

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY												
SR 3.5.2.3	Verify, for each required ECCS injection/spray subsystem, locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program												
SR 3.5.2.4	<p>-----NOTES-----</p> <p>1. One LPCI subsystem may be considered OPERABLE during alignment and operation for decay heat removal if capable of being manually realigned and not otherwise inoperable.</p> <p>2. Not required to be met for system vent flowpaths opened under administrative control.</p> <p>-----</p> <p>Verify each required ECCS injection/spray subsystem manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.</p>	In accordance with the Surveillance Frequency Control Program												
SR 3.5.2.5	<p>Verify each required ECCS pump develops the specified flow rate against a system head corresponding to the specified reactor pressure.</p> <table><thead><tr><th>SYSTEM</th><th>FLOW RATE</th><th>NO. OF PUMPS</th><th>SYSTEM HEAD CORRESPONDING TO A REACTOR PRESSURE OF</th></tr></thead><tbody><tr><td>CS</td><td>≥ 4250 gpm</td><td>1</td><td>≥ 113 psig</td></tr><tr><td>LPCI</td><td>≥ 7700 gpm</td><td>1</td><td>≥ 20 psig</td></tr></tbody></table>	SYSTEM	FLOW RATE	NO. OF PUMPS	SYSTEM HEAD CORRESPONDING TO A REACTOR PRESSURE OF	CS	≥ 4250 gpm	1	≥ 113 psig	LPCI	≥ 7700 gpm	1	≥ 20 psig	In accordance with the Inservice Testing Program
SYSTEM	FLOW RATE	NO. OF PUMPS	SYSTEM HEAD CORRESPONDING TO A REACTOR PRESSURE OF											
CS	≥ 4250 gpm	1	≥ 113 psig											
LPCI	≥ 7700 gpm	1	≥ 20 psig											
SR 3.5.2.6	<p>-----NOTE-----</p> <p>Vessel injection/spray may be excluded.</p> <p>-----</p> <p>Verify each required ECCS injection/spray subsystem actuates on an actual or simulated automatic initiation signal.</p>	In accordance with the Surveillance Frequency Control Program												

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.3.1	Verify the RCIC System locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program
SR 3.5.3.2	<p>-----NOTE----- Not required to be met for system vent flow paths opened under administrative control.</p> <p>Verify each RCIC System manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.</p>	In accordance with the Surveillance Frequency Control Program
SR 3.5.3.3	<p>-----NOTE----- Not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test.</p> <p>Verify, with reactor pressure <math>\leq 1058</math> psig and <math>\geq 920</math> psig, the RCIC pump can develop a flow rate <math>\geq 400</math> gpm against a system head corresponding to reactor pressure.</p>	In accordance with the Surveillance Frequency Control Program
SR 3.5.3.4	<p>-----NOTE----- Not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test.</p> <p>Verify, with reactor pressure <math>\leq 165</math> psig, the RCIC pump can develop a flow rate <math>\geq 400</math> gpm against a system head corresponding to reactor pressure.</p>	In accordance with the Surveillance Frequency Control Program
SR 3.5.3.5	<p>-----NOTE----- Vessel injection may be excluded.</p> <p>Verify the RCIC System actuates on an actual or simulated automatic initiation signal.</p>	In accordance with the Surveillance Frequency Control Program



SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.2.3.2	Verify RHR suppression pool cooling subsystem locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program
SR 3.6.2.3.3	Verify each required RHR pump develops a flow rate $\geq 7700$ gpm through the associated heat exchanger while operating in the suppression pool cooling mode.	In accordance with the Inservice Testing Program

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.2.4.2	Verify RHR suppression pool spray subsystem locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program
SR 3.6.2.4.3	Verify each suppression pool spray nozzle is unobstructed.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.2.5.2	Verify RHR drywell spray subsystem locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program
SR 3.6.2.5.3	Verify each drywell spray nozzle is unobstructed.	Following maintenance which could result in nozzle blockage

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. (continued)	B.3 Initiate action to restore required standby gas treatment subsystem(s) to OPERABLE status.	Immediately
	<u>AND</u> 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
	<u>AND</u> C.2 Monitor reactor coolant temperature.	<u>AND</u> Once per 12 hours thereafter  Once per hour

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.7.1	Verify one RHR shutdown cooling subsystem is operating.	In accordance with the Surveillance Frequency Control Program
SR 3.9.7.2	<p><u>NOTE</u></p> <p>An operating RHR shutdown cooling subsystem will meet this requirement for the RHR shutdown cooling subsystem running unless the RHR shutdown cooling subsystem is in a low flow system operation.</p> <p>Verify required RHR shutdown cooling subsystem locations susceptible to gas accumulation are sufficiently filled with water.</p>	In accordance with the Surveillance Frequency Control Program

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.	<p>C.1 Verify reactor coolant circulation by an alternate method.</p> <p><u>AND</u></p> <p>C.2 Monitor reactor coolant temperature.</p>	<p>1 hour from discovery of no reactor coolant circulation</p> <p><u>AND</u></p> <p>Once per 12 hours thereafter</p> <p>Once per hour</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.9.8.1 Verify one RHR shutdown cooling subsystem is operating.	In accordance with the Surveillance Frequency Control Program
<p>SR 3.9.8.2</p> <p><u>NOTE</u></p> <p>An operating RHR shutdown cooling subsystem will meet this requirement for the RHR shutdown cooling subsystem running unless the RHR shutdown cooling subsystem is in a low flow system operation.</p> <p>Verify required RHR shutdown cooling subsystem locations susceptible to gas accumulation are sufficiently filled with water.</p>	In accordance with the Surveillance Frequency Control Program



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO

AMENDMENT NO. 278 TO RENEWED FACILITY OPERATING LICENSE NO. DPR-57

AND

AMENDMENT NO. 222 TO RENEWED FACILITY OPERATING LICENSE NO. NPF-5

SOUTHERN NUCLEAR OPERATING COMPANY, INC.

EDWIN I. HATCH NUCLEAR PLANT, UNIT NOS. 1 AND 2

DOCKET NOS. 50-321 AND 50-366

1.0 INTRODUCTION

By application dated January 13, 2015 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML15014A411), as supplemented by letters dated June 16 and November 24, 2015 (ADAMS Accession Nos. ML15167A279 and ML15328A521, respectively), Southern Nuclear Operating Company, Inc. (SNC, the licensee), requested changes to the Technical Specifications (TS) for the Edwin I. Hatch Nuclear Plant (HNP), Unit Nos. 1 and 2. The supplements dated June 16 and November 24, 2015, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the staff's original proposed no significant hazards consideration determination as published the *Federal Register* on March 17, 2015 (80 FR 13911).

The proposed changes would revise the TS requirements related to Generic Letter 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray systems," as described in Technical Specifications Task Force (TSTF) Standard Technical Specifications (STS) Change Traveler TSTF-523, Revision 2, "Generic Letter 2008-01, Managing Gas Accumulation." (ADAMS Accession No. ML13053A075). Specifically, the changes revise surveillance requirements (SRs) related to gas accumulation for the emergency core cooling system (ECCS) and reactor core isolation cooling (RCIC) system. The changes also add new SRs related to gas accumulation for the decay heat removal (DHR), residual heat removal (RHR), shutdown cooling (SDC), and containment spray (CS) systems.

## 2.0 REGULATORY EVALUATION

### 2.1 Background

Gas accumulation in reactor systems can result in water hammer, pump cavitation, and pumping of non-condensable gas into the reactor vessel. These effects may result in the subject system being unable to perform its specified safety function. The U.S. Nuclear Regulatory Commission (NRC) issued GL 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, DHR, and Containment Spray Systems," in January 2008 to address the issue of gas accumulation in ECCS, DHR, and CS systems (ADAMS Accession No. ML072910759). The industry and NRC staff agreed that a change to the STS and plant-specific TS would be necessary to address some issues discussed in GL 2008-01. TSTF-523 contains changes to the TS SRs and TS Bases to address some of the concerns in GL 2008-01. The licensee proposed amending the HNP, Units 1 and 2, TS using a plant-specific adoption of the TSTF-523 changes.

### 2.2 Technical Specification Changes

Changes were proposed for SRs 3.5.1.1, 3.5.1.2, 3.5.2.3, 3.5.2.4, 3.5.3.1, and 3.5.3.2, as well as the addition of new SRs 3.4.7.2, 3.4.8.2, 3.6.2.3.2, 3.6.2.4.2, 3.6.2.5.2, 3.9.7.2, and 3.9.8.2 to TSs 3.4.7, "RHR SDC System – Hot Shutdown," TS 3.4.8, "RHR SDC System – Cold Shutdown," TS 3.5.1, "ECCS – Operating," TS 3.5.2, "ECCS – Shutdown," TS 3.5.3, "RCIC System," TS 3.6.2.3, "RHR Suppression Pool Cooling," TS 3.6.2.4, "RHR Suppression Pool Spray," TS 3.6.2.5, "RHR Drywell Spray," TS 3.9.7, "RHR – High Water Level," and TS 3.9.8, "RHR – Low Water Level," respectively.

The licensee proposed the following TS changes:

- (1) Add Surveillance Requirement (SR) 3.4.7.2, which states,

Verify required RHR shutdown cooling subsystem locations susceptible to gas accumulation are sufficiently filled with water

together with Notes which state,

1. Not required to be performed until 12 hours after reactor steam dome pressure is less than the RHR low pressure permissive pressure
2. An operating RHR shutdown cooling subsystem will meet this requirement for the RHR shutdown cooling subsystem running unless the RHR shutdown cooling subsystem is in a low flow system operation.

and a Frequency of,

In accordance with the Surveillance Frequency Control Program

- (2) Add SR 3.4.8.2, which states,

Verify required RHR shutdown cooling subsystem locations susceptible to gas accumulation are sufficiently filled with water.

together with a Note which states,

An operating RHR shutdown cooling subsystem will meet this requirement for the RHR shutdown cooling subsystem running unless the RHR shutdown cooling subsystem is in a low flow system operation.

and a Frequency of,

In accordance with the Surveillance Frequency Control Program

- (3) Revise the language for SR 3.5.1.1 from,

Verify, for each ECCS injection/spray subsystem, the piping is filled with water from the pump discharge valve to the injection valve.

to,

Verify, for each ECCS injection/spray subsystem, locations susceptible to gas accumulation are sufficiently filled with water.

- (4) Add a Note to SR 3.5.1.2, which states,

Not required to be met for system vent flowpaths opened under administrative control.

- (5) Revise the language for SR 3.5.2.3 from,

Verify, for each ECCS injection/spray subsystem, the piping is filled with water from the pump discharge valve to the injection valve.

to,

Verify, for each ECCS injection/spray subsystem, locations susceptible to gas accumulation are sufficiently filled with water.

- (6) Add a note to SR 3.5.2.4, which states,

Not required to be met for system vent flowpaths opened under administrative control.



- (7) Revise the language for SR 3.5.3.1 from,

Verify the RCIC System piping is filled with water from the pump discharge valve to the injection valve.

to,

Verify the RCIC system locations susceptible to gas accumulation are sufficiently filled with water.

- (8) Add a Note to SR 3.5.3.2, which states,

Not required to be met for system vent flow paths opened under administrative control.

- (9) Add SR 3.6.2.3.2, which states,

Verify RHR suppression pool cooling subsystem locations susceptible to gas accumulation are sufficiently filled with water.

with a Frequency of,

In accordance with the Surveillance Frequency Control Program

- (10) Add SR 3.6.2.4.2, which states,

Verify RHR suppression pool spray subsystem locations susceptible to gas accumulation are sufficiently filled with water.

with a Frequency of,

In accordance with the Surveillance Frequency Control Program

- (11) Add SR 3.6.2.5.2, which states,

Verify RHR drywell spray subsystem locations susceptible to gas accumulation are sufficiently filled with water.

with a Frequency of,

In accordance with the Surveillance Frequency Control Program

- (12) Add SR 3.9.7.2, which states,

Verify required RHR shutdown cooling subsystem locations susceptible to gas accumulation are sufficiently filled with water.

together with a Note which states,

An operating RHR shutdown cooling subsystem will meet this requirement for the RHR shutdown cooling subsystem running unless the RHR shutdown cooling subsystem is in a low flow system operation.

with a Frequency of,

In accordance with the Surveillance Frequency Control Program

(13) Add SR 3.9.8.2, which states,

Verify required RHR shutdown cooling subsystem locations susceptible to gas accumulation are sufficiently filled with water.

together with a Note which states,

An operating RHR shutdown cooling subsystem will meet this requirement for the RHR shutdown cooling subsystem running unless the RHR shutdown cooling subsystem is in a low flow system operation.

with a Frequency of,

In accordance with the Surveillance Frequency Control Program

Associated Bases changes were proposed for the respective Limiting Conditions for Operations (LCOs), SR changes, and SR additions. Both HNP, Units 1 and 2, have the same proposed TS changes and this safety evaluation applies to both HNP, Units 1 and 2.

## 2.3 Regulatory Review

The regulations in Appendix A to Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50 or similar plant-specific principal design criteria provide design requirements. Appendix B to 10 CFR Part 50, the TSs, and the licensee quality assurance programs provide operating requirements. The regulatory requirements of 10 CFR Part 50, Appendix A, that are applicable to gas management in the subject systems include: General Design Criteria (GDC) 1, 34, 35, 36, 37, 38, 39 and 40. GDC 1 requires that the subject systems be designed, fabricated, erected, and tested to quality standards. GDC 34 requires an RHR system designed to maintain specified acceptable fuel design limits and to meet design conditions that are not exceeded if a single failure occurs and specified electrical power systems fail. GDC 35, 36, and 37 require an ECCS design that meets performance, inspection, and testing requirements. Additionally, the regulations in 10 CFR 50.46 provide specified ECCS performance criteria. GDC 38, 39, and 40 require a containment heat removal system design that meets performance, inspection, and testing requirements.

Quality assurance criteria provided in 10 CFR Part 50, Appendix B, that apply to gas management in the subject systems include: Criteria III, V, XI, XVI, and XVII. Criteria III and V require measures to ensure that applicable regulatory requirements and the design basis, as defined in 10 CFR 50.2, "Definitions," and as specified in the license application, are correctly translated into controlled specifications, drawings, procedures, and instructions. Criterion XI

requires a test program to ensure that the subject systems will perform satisfactorily in service and requires that test results shall be documented and evaluated to ensure that test requirements have been satisfied. Criterion XVI requires measures to ensure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances, are promptly identified and corrected, and that significant conditions adverse to quality are documented and reported to management. Criterion XVII requires maintenance of records of activities affecting quality.

The NRC's regulatory requirements related to the content of the TSs are contained in 10 CFR 50.36(c). The regulations at 10 CFR 50.36 require that the TSs include items in the following categories: (1) safety limits, limiting safety systems settings, and limiting control settings; (2) limiting conditions for operation; (3) SRs; (4) design features; and (5) administrative controls. SRs are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the LCOs will be met. The HNP TS 5.4 requires that written procedures be established, implemented, and maintained covering the applicable procedures recommended in Appendix A to Regulatory Guide (RG) 1.33, "Quality Assurance Program Requirements (Operation)." Appendix A to RG 1.33 identifies instructions for filling and venting the ECCS and DHR system, as well as for draining and refilling heat exchangers. Standard TSs and most licensee TSs include SRs to verify that at least some of the subject systems piping is filled with water.

In the supplement dated January 13, 2015, the licensee stated in its LAR that the HNP, Unit 1, construction permit was issued September 30, 1969, consistent with the 1967 General Design Criteria (ML043310029), as discussed in Section F.3 of the HNP Updated Final Safety Analysis Report. The HNP, Unit 1, equivalents of the referenced GDCs in the model SE are listed in the following table:

10 CFR 50 Appendix A GDCs	HNP, Unit 1, Equivalents
GDC 1 – Quality Standards and Records	1967 GDC 1 – Quality Standards
GDC 34 – Residual Heat Removal	1967 GDCs: <ul style="list-style-type: none"> <li>• 44 – Emergency Core Cooling Systems Capability (Category A)</li> <li>• 52 – Containment Heat Removal Systems (Category A)</li> <li>• 39 – Emergency Power for Engineered Safety Features (Category A)</li> <li>• 41 – Engineered Safety Features Performance Capability (Category A)</li> </ul>

GDC 35 – Emergency Core Cooling	<p>1967 GDCs:</p> <ul style="list-style-type: none"> <li>• 44 – Emergency Core Cooling Systems Capability (Category A)</li> <li>• 39 – Emergency Power for Engineered Safety Features (Category A)</li> <li>• 41 – Engineered Safety Features Performance Capability (Category A)</li> </ul>
GDC 36 – Inspection of Emergency Core Cooling Systems	1967 GDC 45 - Inspection of Emergency Core Cooling Systems Capability (Category A)
GDC 37 – Testing of Emergency Core Cooling Systems	<p>1967 GDCs:</p> <ul style="list-style-type: none"> <li>• 46 – Testing of Emergency Core Cooling Systems Components (Category A)</li> <li>• 47 – Testing of Emergency Core Cooling Systems (Category A)</li> <li>• 48 – Testing of Operational Sequence of Emergency Core Cooling Systems (Category A)</li> </ul>
GDC 38 – Containment Heat Removal	<p>1967 GDCs:</p> <ul style="list-style-type: none"> <li>• 52 – Containment Heat Removal Systems (Category A)</li> <li>• 39 – Emergency Power for Engineered Safety Features (Category A)</li> <li>• 41 – Engineered Safety Features Performance Capability (Category A)</li> </ul>
GDC 39 – Inspection of Containment Heat Removal	• 1967 GDC 58 – Inspections of Containment Pressure-Reducing Systems (Category A)
GDC 40 – Testing of Containment Heat Removal System	<p>1967 GDCs:</p> <ul style="list-style-type: none"> <li>• 59 – Testing of Containment Pressure-Reducing Systems Components (Category A)</li> <li>• 60 – Testing of Containment Spray Systems Components (Category A)</li> <li>• 61 – Testing of Operational Sequence of Pressure-Reducing Systems Components (Category A)</li> </ul>

The HNP, Unit 2, construction permit was issued December 27, 1972, in accordance with the 10 CFR 50, Appendix A GDCs.

The NRC's guidance for the format and content of licensee TSs can be found in NUREG-1433, "Standard Technical Specifications: General Electric BWR/4 Plants," Revision 4.0 (ADAMS Accession No. ML12104A192).

Regulatory guidance for the NRC staff's review of containment heat removal systems, ECCS, and RHR systems is provided in the following revisions and sections of NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition" (SRP) during the review.

- Revision 3 of SRP, Section 6.2.2, "Containment Heat Removal Systems," dated March 2007 (ADAMS Accession No. ML070160661), provides the procedures concerning the review of containment heat removal under post-accident conditions to help ensure compliance with GDC 38, 39, and 40.
- Revision 3 of SRP, Section 6.3, "Emergency Core Cooling System," dated March 2007 (ADAMS Accession No. ML070550068), provides the procedures concerning the review of ECCS to help ensure compliance with GDC 35, 36, and 37.
- Revision 5 of SRP, Section 5.4.7, "Residual Heat Removal System," dated May 2010 (ADAMS Accession No. ML100680577), provides the procedures concerning the review of RHR system as it is used to cool the reactor coolant system (RCS) during and following shutdown to help ensure compliance with GDC 34.

### 3.0 TECHNICAL EVALUATION

#### 3.1 Applicable Systems

In a letter dated October 10, 2008 (ADAMS Accession No. ML082880119), SNC identified the following systems as within the scope of Generic Letter 2008-01 for HNP:

- ECCS
  - High Pressure Coolant Injection (HPCI) System
  - Low Pressure Coolant Injection (LPCI) System (Note: LPCI is an operating mode of the Residual Heat Removal (RHR) System)
  - Core Spray (CS) System
- RHR System (Note: Containment Spray is an operating mode of the RHR system)
- Reactor Core Isolation Cooling (RCIC) System (Note: Although not explicitly listed as an ECCS system, RCIC was also considered).

#### 3.2 Evaluation of Technical Specification Changes

The NRC staff evaluated the licensee's proposed change against the applicable regulatory guidance in the STS, as modified by TSTF-523. The proposed changes adopted the TS format

and content, to the extent practicable, contained in the changes made to NUREG-1433, Revision 4.0, by TSTF-523.

The NRC staff compared the proposed changes to the existing SRs, as well as the regulatory requirements of 10 CFR 50.36(c).

In license amendment Nos. 266 (Unit 1) and 210 (Unit 2), issued on January 3, 2012 (ADAMS Accession No. ML11108A129), NRC approved the use of the Surveillance Frequency Control Program for HNP.

The new language for the SRs was developed using licensee responses to GL 2008-01 and the NRC discussion contained in Task Interface Agreement (TIA) 2008-03, "ECCS Voiding Relative To Compliance With SRs (SR) 3.5.1.1, 3.5.2.3, and 3.5.3.1" (ADAMS Accession No. ML082560209). Many of the GL 2008-01 responses stated that licensees identified system locations susceptible to gas accumulation. In the TIA, the NRC stated that the intent of the TS SRs, which state "full of water," may be met if the licensee can establish, through an Operability Determination, that there is a reasonable expectation that the system in question will perform its specified safety function. Therefore, the phrase, "sufficiently filled with water" was recommended for the proposed TS changes. In the TS, "sufficiently filled with water" is understood to mean "sufficiently filled with water to support Operability." The regulation at 10 CFR 50.36(c)(3) states that one of the purposes of the SR is to verify that the LCO is met. Therefore, the new SR language, "Verify the [system name] locations susceptible to gas accumulation are sufficiently filled with water," is acceptable since this language will allow the licensee to make a conclusion as to whether or not a system is operable.

The language for the Notes that state that the SRs are,

Not required to be performed until 12 hours after reactor steam dome pressure is less than the RHR low pressure permissive pressure.

is acceptable because the Notes provide a limited time to perform the Surveillance after entering the Applicability of the LCO. However, under the STS usage rules (NUREG-1433, Revision 4.0, Section 1.4), the requirement to manage gas accumulation is not affected. Licensees must have confidence that the SR can be met or the LCO must be declared not met.

The language for the Notes that state,

Not required to be met for system vent flowpaths opened under administrative control.

is necessary to allow the licensee to credit an administratively-controlled manual action to close the system vent flow path in order to maintain system operability during system venting and performance of the proposed gas accumulation SR. Therefore, the Notes are acceptable.

The NRC staff found that the proposed SRs meet the regulatory requirements of 10 CFR 50.36 because they provide assurance that the necessary quality of systems and components will be maintained and that the LCO will be met.

### 3.3 Deviations from Traveler TSTF-523

The licensee proposed three deviations from Traveler TSTF-523.

#### 3.3.1 Addition of the Word "required" to SRs

The licensee proposed the addition of the word "required" to clarify that the SRs apply to the train of RHR required to be operable at a given time to SRs 3.4.7.2, 3.4.8.2, 3.9.8.2. The TSTF-523 states that some LCOs only require one train or loop of DHR/RHR/SDC to be Operable at a given time. The proposed SR for those TS state:

Verify the required [system] [loop/train/subsystem] locations susceptible to gas accumulation are sufficiently filled with water.

In NUREG-1433, Revision 4.0, the term "required" means "required by the LCO." The word "required" is added as a convention to avoid confusion since SRs are not applicable to equipment that is not required to be Operable.

The NRC staff determined that the addition of the word "required" clarifies the applicability of the SR and does not change the intent. Therefore, the change is acceptable.

#### 3.3.2 SR Performance Requirements when RHR is in Operation

The licensee proposed a note be added to SR 3.4.7.2, 3.4.8.2, 3.9.7.2, and 3.9.8.2 which states:

An operating RHR shutdown cooling subsystem will meet this requirement for the RHR shutdown cooling subsystem running unless the RHR shutdown cooling subsystem is in a low flow system operation.

In the supplement dated November 24, 2015, the licensee stated that the operating procedures for these systems ensure that the system is properly filled and vented after any gas void-inducing maintenance activity and before being placed in standby or service. Once the system is placed in service, operating parameters are monitored to ensure the capability of the running system is meeting its system requirements and the presence of gas voids is not detected during running. If erratic pump operation should occur, it will be documented in a Condition Report, and the potential for gas intrusion will be assessed as needed. If a system is currently running and a void exists that is affected by a later change in flow rate or flow path, monitoring of the system parameters will provide feedback of a potential changing void system configuration and require a Condition Report to be written to address the issue to ensure gas accumulation is brought within the acceptance criteria limits.

The NRC staff reviewed the information provided by the licensee and determined that allowing a SR to be met by having a system in service is acceptable since this demonstrates that it is operable, provided it is not in low flow operation. During operation, it is not reasonable to shut the subsystem down to perform the SR and operation with a substantial flow rate is acceptable in place of performing the SR. The proposed note to the affected SRs would clarify when performance of the SR is required. The requirements of the SR must be met between performances of the SR anytime the plant is in the mode of applicability of the associated LCO.

Therefore, this change is acceptable.

### 3.3.3 Addition of SRs for RHR Drywell Spray

The licensee proposed a new SR 3.6.2.5.2 be added to TS 3.6.2.5, "RHR Drywell Spray." The drywell spray is a mode of RHR system operation that may be used to reduce temperature and pressure of the primary containment atmosphere during post accident conditions. It is operated to wash inorganic iodides and particulates from the primary containment atmosphere to the suppression pool. During this mode of operation, the RHR pumps are aligned to pump water from the suppression pool to the spray headers in the drywell.

The revised SR will add requirements for managing gas accumulation in the appropriate portions of the RHR system piping associated with this mode of operation of RHR. The NRC staff finds that it is appropriate to verify that this piping in the RHR system is sufficiently filled with water. Therefore, this change is acceptable.

## 4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Georgia State official was notified of the proposed issuance of the amendments on March 28, 2016. The State official had no comments.

## 5.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to the installation or use of facility components located within the restricted area as defined in 10 CFR Part 20 and change surveillance requirements. The NRC staff has determined that the amendments involve no significant increase in the amounts and no significant change in the types of any effluents that may be released offsite and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration, and there has been no public comment on such finding (80 FR 13911). Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

## 6.0 CONCLUSION

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

Principal Contributor: K. West  
W. Lyon

Date: April 14, 2016



C. R. Pierce

- 2 -

A copy of the related Safety Evaluation is also enclosed. A Notice of Issuance will be included in the Commission's biweekly *Federal Register* notice.

Sincerely,

/RA/

Michael Orenak, Project Manager  
Plant Licensing Branch II-1  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket Nos. 50-321 and 50-366

Enclosures:

1. Amendment No. 278 to DPR-57
2. Amendment No. 222 to NPF-5
3. Safety Evaluation

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DATE	04/04/16	04/04/16	02/25/16	10/16/15
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DATE	04/06/16	04/14/16	04/14/16	

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