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NOV 2 4 2015

SOUTHERN NUCLEAR
A SOUTHERN COMPANY

Docket Nos.: 50-321
50-366

NL-15-2047

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

Edwin I. Hatch Nuclear Plant – Units 1 and 2
Response to Second Request For Additional Information Regarding
SNC License Amendment Request for TSTF-523, Revision 2

References:

1. SNC Letter NL-14-1349, *Edwin I. Hatch Nuclear Plant – Units 1 and 2 License Amendment Request to Revise Technical Specifications Regarding Generic Letter 2008-01, Managing Gas Accumulation in accordance with TSTF-523, Revision 2, Using the Consolidated Line Item Improvement Process (CLIIP)*, dated January 13, 2015, ML15014A411.

2. NRC Letter, *Edwin I. Hatch Nuclear Plant, Units 1 and 2 – Request for Additional Information (TAC NOS. MF5579 AND MF5580),* dated May 18, 2015, ML15133A316.

3. SNC Letter NL-15-0964, *Edwin I. Hatch Nuclear Plant, Units 1and 2 – Request for Additional Information Regarding SNC License Amendment Request for TSTF-523, Revision 2*, dated June 16, 2015, ML15167A279.

4. NRC Letter, *Edwin I. Hatch Nuclear Plant, Units 1 and 2 – Request for Additional Information (CAC NOS. MF5579 AND MF5580),* dated October 28, 2015.

Ladies and Gentlemen:

On January 13, 2015, in accordance with the provisions of 10 CFR 50.90 Southern Nuclear Operating Company (SNC) submitted a request for an amendment to the technical specifications (TS) for Edwin I. Hatch Nuclear Plant (HNP), Units 1 and 2 (Reference 1).

The proposed amendment would modify 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."

Following the submittal of the HNP License Amendment Request, SNC received a request for additional information (RAIs) by the NRC on May 18, 2015 (Reference 2). The response to this set of RAIs was addressed in SNC Letter NL-15-0964 (Reference 3).

The NRC has reviewed this response and issued a follow-up set of RAIs (Reference 4). Enclosure 1 provides the requested information. Enclosure 2 provides the replacement pages for the affected LAR HNP Technical Specification Marked Up Pages. Enclosure 3 provides the replacement pages for the affected LAR HNP Technical Specification Clean Typed Pages. Enclosure 4 of this letter will provide the HNP replacement pages for the information only affected marked up Technical Specification Bases pages.

This letter contains no new NRC commitments. If you have any questions, please contact Ken McElroy at (205) 992-7369.

Mr. C. R. Pierce states he is Regulatory Affairs Director of Southern Nuclear Operating Company, is authorized to execute this oath on behalf of Southern Nuclear Operating Company and, to the best of his knowledge and belief, the facts set forth in this letter are true.

Respectfully submitted,

C. R. Pierce

C. R. Pierce
Regulatory Affairs Director

CRP/GLS/lac

Sworn to and subscribed before me this 24th *day of* November, *2015.*

Notary Public

My commission expires: 1/2/2018

Enclosures:
1. Response to Request for Additional Information – TSTF-523
2. HNP Technical Specification Marked Up Replacement Pages
3. HNP Technical Specification Clean Typed Replacement Pages
4. HNP Technical Specification Bases Marked Up Replacement Pages (For Information Only)

cc: Southern Nuclear Operating Company
Mr. S. E. Kuczynski, Chairman, President & CEO
Mr. D. G. Bost, Executive Vice President & Chief Nuclear Officer
Mr. M. D. Meier, Vice President – Regulatory Affairs
Mr. D. R. Vineyard, Vice President – Hatch
Mr. D. R. Madison, Vice President – Fleet Operations
Mr. B. J. Adams, Vice President – Engineering
Mr. G. L. Johnson, Regulatory Affairs Manager – Hatch
RType: CHA02.004

U. S. Nuclear Regulatory Commission
Mr. L. D. Wert, Regional Administrator (acting)
Mr. R. E. Martin, NRR Senior Project Manager – Hatch
Mr. D. H. Hardage, Senior Resident Inspector – Hatch

State of Georgia
Mr. J. H. Turner, Director – Environmental Protection Division

Edwin I. Hatch Nuclear Plant – Units 1 and 2
Response to Second Request For Additional Information Regarding
SNC License Amendment Request for TSTF-523, Revision 2

Enclosure 1

Response to Request for Additional Information – TSTF-523

The U.S. Nuclear Regulatory Commission (NRC) staff is continuing its review of the Southern Nuclear Operating Company, Inc. (SNC), license amendment request (LAR), dated January 13, 2015, (Agencywide Documents Access and Management System (ADAMS) Accession No. ML 15014A411) to Revise Technical Specifications Regarding Generic Letter 2008-01, Managing Gas Accumulation, in accordance with TSTF-523, Revision 2, for the Edwin I. Hatch Nuclear Plant, Units 1 and 2. We have determined that additional information is necessary as follows.

Original RAI 1a:

An acceptable surveillance must include allowance for gas accumulation until the next surveillance is scheduled. How is this requirement satisfied by the following:

a. Satisfactorily operating a system or subsystem such as a residual heat removal shutdown cooling subsystem?

SNC Response to Original RA1a:

a. The current systems under GL 2008-01 have been reviewed and the operating procedures for these systems ensure that the system is properly filled and vented after any maintenance activity that could induce gas voids in the system and before being placed in standby or in service to reduce voids upon system operation initiation. 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. Erratic pump operation, including suction pressure, discharge pressure, and flow oscillations, as well as unusual vibration levels, can be indicative of air or gas accumulation in the system piping. Actions will be taken to document, via Condition Report (CR), and investigate the potential gas intrusion as needed.

   If a system is currently running and the 31 day frequency should occur, monitoring the system running parameters, as discussed above, ensures that the system is meeting its system requirements for the required surveillance. If the system is in standby, then the conventional gas accumulation monitoring process will be performed per the required surveillance frequency control program.

NRC Additional RAI to SNC's original response to RAI 1a:

SNC's response to RAI 1a states "If a system is currently running and the 31 day frequency should occur, monitoring the system running parameters ... ensures that the system is meeting its system requirements for the required surveillance." If the system is running with sufficient flow, monitoring the running parameters is effective. However, if the flow is low, the gas voids may not transport through the system. Additionally, stagnant branch lines in an operating system may be susceptible to gas accumulation. Please explain how you take into consideration the flowrate of the operating system and the stagnant branch lines when crediting the

running system as meeting the surveillance?

SNC's response to the NRC Additional RAI 1a:

As stated, 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. Erratic pump operation, including suction pressure, discharge pressure, and flow oscillations, as well as unusual vibration levels, can be indicative of air or gas accumulation in the system piping. Actions will be taken to document, via Condition Report (CR), and investigate the potential gas intrusion as needed. Monitoring of these parameters continues while the system is running. The RHR Shutdown Cooling (SDC) System Operating Procedure (34SO-E11-010-1(2)) provides operating guidance to maintain the RHR SDC system single loop flow between 7700 to 8200 gpm to ensure proper circulation. When starting an RHR pump, RHR flow is also limited to approximately 1000 gpm (NOT less than 1000 gpm) for two minutes to clear any voids in the discharge piping when started. This flow guidance reduces the chance of low flow conditions in the RHR SDC system introducing voids when operating. Plant operating experience along with improvements in the reduction of voids as captured in HNP responses to GL 2008-01 makes it prudent to allow a RHR SDC system to continue to run instead of performing a system evolution of securing the RHR SDC system to perform ultrasonic testing and venting for the 31 day surveillance. In fact, the RHR SDC operation is unique in that it is a system run continuously during certain low mode plant conditions; instead of just during surveillance requirements or transients. However, if 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 CR to be written to address the issue to ensure gas accumulation is brought within the acceptance criteria limits. Evaluation of the event through the CR process would require further investigation which should determine any void size change and verification accumulated gas is within acceptance criteria.

Per TSTF-523 Revision 2 traveler submitted to the NRC dated February 21, 2013 (ML13053A075), the 31 day surveillance frequency is based on the gradual nature of gas accumulation, the procedural controls governing system operation, and operating experience. This approach was reviewed and endorsed by the NRC letter Model Safety Evaluation for Plant-Specific Adoption of Technical Specifications Task Force Traveler TSTF-523, Revision 2, "Generic letter 2008-01, Managing Gas Accumulation," using the Consolidated Line Item Improvement Process (CLIIP), dated December 23, 2013 (ML13255A169). Therefore, because gas accumulation is based on a gradual nature and it is not often that the RHR SDC system would be running when its 31 day surveillance frequency is due; accepting a running RHR SDC system as meeting its surveillance, as long as no indications of erratic system operation is observed due to voids, does seem appropriate due to the controls in place for the system operational flow guidance and the monitoring of no erratic system operation while running.

After further consideration of the NRC RAI, it seems prudent to amend the Technical Specifications for the HNP SR's (3.4.7.2, 3.4.8.2, 3.9.7.2, and 3.9.8.2) with a note and a clarification of this note in the corresponding Technical Specification Bases sections to ensure the RHR subsystem remains sufficiently filled with water stating:

Technical Specification Note:

"Note:
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."

Technical Specification Bases Note:

"This SR is modified by a Note clarifying that the SR may be met for a running RHR shutdown cooling subsystem by virtue of having the RHR shutdown cooling subsystem in service in accordance with operating procedures except when the RHR subsystem is in a low flow system operation which could allow the potential of gas voids not transporting through the system and the potential accumulation of gas voids in stagnant branch lines"

Enclosure 2 of this letter will provide the HNP License Amendment Request (LAR), Reference 1, replacement pages for the affected Marked Up Technical Specification pages. Enclosure 3 of this letter will provide the HNP LAR replacement pages for the affected Clean Typed Technical Specification Pages. Enclosure 4 of this letter will provide the HNP LAR replacement pages for the information only affected marked up Technical Specification Bases pages.

Edwin I. Hatch Nuclear Plant – Units 1 and 2
Response to Second Request For Additional Information Regarding
SNC License Amendment Request for TSTF-523, Revision 2

Enclosure 2

HNP Technical Specification Marked Up Replacement Pages

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.7.1	----------NOTE---------- Not required to be met until 2 hours after reactor steam dome pressure is less than the RHR low pressure permissive pressure. ---------- Verify one RHR shutdown cooling subsystem or recirculation pump is operating.	In accordance with the Surveillance Frequency Control Program
SR 3.4.7.2	----------NOTES---------- 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. ---------- Verify required RHR shutdown cooling subsystem locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. No RHR shutdown cooling subsystem in operation. AND No recirculation pump in operation.	B.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 B.2 Monitor reactor coolant temperature.	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	----------NOTE---------- 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

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.	In accordance with the Surveillance Frequency Control Program
SR 3.9.7.2	----------NOTE---------- 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

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.	In accordance with the Surveillance Frequency Control Program
SR 3.9.8.2	----------NOTE---------- 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 3.4.7.1	----------NOTE---------- Not required to be met until 2 hours after reactor steam dome pressure is less than the RHR low pressure permissive pressure. ---------- Verify one RHR shutdown cooling subsystem or recirculation pump is operating.	In accordance with the Surveillance Frequency Control Program
SR 3.4.7.2	----------NOTES---------- 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. ---------- Verify required RHR shutdown cooling subsystem locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. No RHR shutdown cooling subsystem in operation. AND No recirculation pump in operation.	B.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 B.2 Monitor reactor coolant temperature.	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	----------NOTE---------- 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

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.	In accordance with the Surveillance Frequency Control Program
SR 3.9.7.2	----------NOTE---------- 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

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.	In accordance with the Surveillance Frequency Control Program
SR 3.9.8.2	----------NOTE---------- 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

Edwin I. Hatch Nuclear Plant – Units 1 and 2
Response to Second Request For Additional Information Regarding
SNC License Amendment Request for TSTF-523, Revision 2

Enclosure 3

HNP Technical Specification Clean Typed Replacement Pages

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.7.1	----------NOTE---------- Not required to be met until 2 hours after reactor steam dome pressure is less than the RHR low pressure permissive pressure. ---------- Verify one RHR shutdown cooling subsystem or recirculation pump is operating.	In accordance with the Surveillance Frequency Control Program
SR 3.4.7.2	----------NOTES---------- 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. ---------- Verify required RHR shutdown cooling subsystem locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. No RHR shutdown cooling subsystem in operation. AND No recirculation pump in operation.	B.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 B.2 Monitor reactor coolant temperature.	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	----------NOTE---------- 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

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.	In accordance with the Surveillance Frequency Control Program
SR 3.9.7.2	----------NOTE---------- 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

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.	In accordance with the Surveillance Frequency Control Program
SR 3.9.8.2	----------NOTE---------- 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 3.4.7.1	----------NOTE---------- Not required to be met until 2 hours after reactor steam dome pressure is less than the RHR low pressure permissive pressure. ---------- Verify one RHR shutdown cooling subsystem or recirculation pump is operating.	In accordance with the Surveillance Frequency Control Program
SR 3.4.7.2	----------NOTES---------- 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. ---------- Verify required RHR shutdown cooling subsystem locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. No RHR shutdown cooling subsystem in operation. AND No recirculation pump in operation.	B.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 B.2 Monitor reactor coolant temperature.	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	----------NOTE---------- 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

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.	In accordance with the Surveillance Frequency Control Program
SR 3.9.7.2	----------NOTE---------- 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

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.	In accordance with the Surveillance Frequency Control Program
SR 3.9.8.2	----------NOTE---------- 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

Edwin I. Hatch Nuclear Plant – Units 1 and 2
Response to Second Request For Additional Information Regarding
SNC License Amendment Request for TSTF-523, Revision 2

Enclosure 4

HNP Technical Specification Bases Marked Up Replacement Pages
(For Information Only)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.7.1 (continued)

This Surveillance is modified by a Note allowing sufficient time to align the RHR System for shutdown cooling operation after clearing the pressure interlock that isolates the system, or for placing a recirculation pump in operation. The Note takes exception to the requirements of the Surveillance being met (i.e., forced coolant circulation is not required for this initial 2 hour period), which also allows entry into the Applicability of this Specification in accordance with SR 3.0.4 since the Surveillance will not be "not met" at the time of entry into the Applicability.

SR 3.4.7.2

RHR Shutdown Cooling System piping and components have the potential to develop voids and pockets of entrained gases. Preventing and managing gas intrusion and accumulation is necessary for proper operation of the RHR shutdown cooling subsystems and may also prevent water hammer, pump cavitation, and pumping of noncondensible gas into the reactor vessel.

Selection of RHR Shutdown Cooling System locations susceptible to gas accumulation is based on a review of system design information, including piping and instrumentation drawings, isometric drawings, plan and elevation drawings, and calculations. The design review is supplemented by system walk downs to validate the system high points and to confirm the location and orientation of important components that can become sources of gas or could otherwise cause gas to be trapped or difficult to remove during system maintenance or restoration. Susceptible locations depend on plant and system configuration, such as stand-by versus operating conditions.

The RHR Shutdown Cooling System is OPERABLE when it is sufficiently filled with water. For the RHR SDC piping on the discharge side of the RHR pump, acceptance criteria are established for the volume of accumulated gas at susceptible locations. If accumulated gas is discovered that exceeds the acceptance criteria for the susceptible location (or the volume of accumulated gas at one or more susceptible locations exceeds an acceptance criteria for gas volume in the RHR SDC piping on the discharge side of a pump), the Surveillance is not met. If it is determined by subsequent evaluation that the RHR Shutdown Cooling System is not rendered inoperable by the accumulated gas (i.e., the system is sufficiently filled with water), the Surveillance may be declared met. Accumulated gas should be eliminated or brought within the acceptance criteria limits. Since the RHR SDC piping on the discharge side of the pump is the same as

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.7.2 (continued)

the Low Pressure Coolant Injection piping, performances of surveillances for ECCS TS may satisfy the requirements of this surveillance. For the RHR SDC piping on the suction side of the RHR pump, the surveillance is met by virtue of the performance of operating procedures that ensure that the RHR SDC suction piping is adequately filled and vented. The performance of these manual actions ensures that the surveillance is met.

RHR SDC System locations on the discharge side of the RHR pump susceptible to gas accumulation are monitored and, if gas is found, the gas volume is compared to the acceptance criteria for the location. Susceptible locations in the same system flow path which are subject to the same gas intrusion mechanisms may be verified by monitoring a representative subset of susceptible locations. Monitoring may not be practical for locations that are inaccessible due to radiological or environmental conditions, the plant configuration, or personnel safety. For these locations alternative methods (e.g., operating parameters, remote monitoring) may be used to monitor the susceptible location. Monitoring is not required for susceptible locations where the maximum potential accumulated gas void volume has been evaluated and determined to not challenge system OPERABILITY. The accuracy of the method used for monitoring the susceptible locations and trending of the results should be sufficient to assure system OPERABILITY during the Surveillance interval.

This SR is modified by Note 1 that states the SR is not required to be performed until 12 hours after reactor steam dome pressure is less than the RHR low pressure permissive pressure. In a rapid shutdown, there may be insufficient time to verif y all susceptible locations prior to entering the Applicability.

This SR is modified by Note 2 clarifying that the SR may be met for a running RHR shutdown cooling subsystem by virtue of having the RHR shutdown cooling subsystem in service in accordance with operating procedures except when the RHR subsystem is in a low flow system operation which could allow the potential of gas voids not transporting through the system and the potential accumulation of gas voids in stagnant branch lines.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.7.2 (continued)

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program. The Surveillance Frequency may vary by location susceptible to gas accumulation.

REFERENCES

1. NRC No. 93-102, "Final Policy Statement on Technical Specification Improvements," July 23, 1993.

BASES

ACTIONS

B.1 and B.2 (continued)

function and is modified such that the 1 hour is applicable separately for each occurrence involving a loss of coolant circulation. Furthermore, verification of the functioning of the alternate method must be reconfirmed every 12 hours thereafter. This will provide assurance of continued temperature monitoring capability.

During the period when the reactor coolant is being circulated by an alternate method (other than by the required RHR shutdown cooling subsystem or recirculation pump), the reactor coolant temperature and pressure must be periodically monitored to ensure proper function of the alternate method. The once per hour Completion Time is deemed appropriate.

SURVEILLANCE REQUIREMENTS

SR 3.4.8.1

This Surveillance verifies that one RHR shutdown cooling subsystem or recirculation pump is in operation and circulating reactor coolant. The required flow rate is determined by the flow rate necessary to provide sufficient decay heat removal capability. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

SR 3.4.8.2

RHR Shutdown Cooling System piping and components have the potential to develop voids and pockets of entrained gases. Preventing and managing gas intrusion and accumulation is necessary for proper operation of the RHR shutdown cooling subsystems and may also prevent water hammer, pump cavitation, and pumping of noncondensible gas into the reactor vessel.

Selection of RHR Shutdown Cooling System locations susceptible to gas accumulation is based on a review of system design information, including piping and instrumentation drawings, isometric drawings, plan and elevation drawings, and calculations. The design review is supplemented by system walk downs to validate the system high points and to confirm the location and orientation of important components that can become sources of gas or could otherwise cause gas to be trapped or difficult to remove during system maintenance or restoration. Susceptible locations depend on plant and system configuration, such as stand-by versus operating conditions.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.8.2 (continued)

The RHR Shutdown Cooling System is OPERABLE when it is sufficiently filled with water. For the RHR SDC piping on the discharge side of the RHR pump, acceptance criteria are established for the volume of accumulated gas at susceptible locations. If accumulated gas is discovered that exceeds the acceptance criteria for the susceptible location (or the volume of accumulated gas at one or more susceptible locations exceeds an acceptance criteria for gas volume in the RHR SDC piping on the discharge side of a pump), the Surveillance is not met. If it is determined by subsequent evaluation that the RHR Shutdown Cooling System is not rendered inoperable by the accumulated gas (i.e., the system is sufficiently filled with water), the Surveillance may be declared met. Accumulated gas should be eliminated or brought within the acceptance criteria limits. Since the RHR SDC piping on the discharge side of the pump is the same as the Low Pressure Coolant Injection piping, performances of surveillances for ECCS TS may satisfy the requirements of this surveillance. For the RHR SDC piping on the suction side of the RHR pump, the surveillance is met by virtue of the performance of operating procedures that ensure that the RHR SDC suction piping is adequately filled and vented. The performance of these manual actions ensures that the surveillance is met.

RHR SDC System locations on the discharge side of the RHR pump susceptible to gas accumulation are monitored and, if gas is found, the gas volume is compared to the acceptance criteria for the location. Susceptible locations in the same system flow path which are subject to the same gas intrusion mechanisms may be verified by monitoring a representative subset of susceptible locations. Monitoring may not be practical for locations that are inaccessible due to radiological or environmental conditions, the plant configuration, or personnel safety. For these locations alternative methods (e.g., operating parameters, remote monitoring) may be used to monitor the susceptible location. Monitoring is not required for susceptible locations where the maximum potential accumulated gas void volume has been evaluated and determined to not challenge system OPERABILITY. The accuracy of the method used for monitoring the susceptible locations and trending of the results should be sufficient to assure system OPERABILITY during the Surveillance interval.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.8.2 (continued)

This SR is modified by a Note clarifying that the SR may be met for a running RHR shutdown cooling subsystem by virtue of having the RHR shutdown cooling subsystem in service in accordance with operating procedures except when the RHR subsystem is in a low flow system operation which could allow the potential of gas voids not transporting through the system and the potential accumulation of gas voids in stagnant branch lines.

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program. The Surveillance Frequency may vary by location susceptible to gas accumulation.

REFERENCES

1. NRC No. 93-102, "Final Policy Statement on Technical Specification Improvements," July 23, 1993.

BASES (continued)

ACTIONS

B.1, B.2, B.3, and B.4 (continued)

isolation capability. The administrative controls can consist of stationing a dedicated operator, who is in continuous communication with the control room, at the controls of the isolation device. In this way, the penetration can be rapidly isolated when a need for secondary containment isolation is indicated.). This may be performed as an administrative check, by examining logs or other information to determine whether the components are out of service for maintenance or other reasons. It is not necessary to perform the Surveillances needed to demonstrate the OPERABILITY of the components. If, however, any required component is inoperable, then it must be restored to OPERABLE status. In this case, a Surveillance may need to be performed to restore the component to OPERABLE status. Actions must continue until all required components are OPERABLE.

C.1 and C.2

If no RHR shutdown cooling subsystem is in operation, an alternate method of coolant circulation is required to be established within 1 hour. The Completion Time is modified such that the 1 hour is applicable separately for each occurrence involving a loss of coolant circulation.

During the period when the reactor coolant is being circulated by an alternate method (other than by the required RHR shutdown cooling subsystem), the reactor coolant temperature must be periodically monitored to ensure proper functioning of the alternate method. The once per hour Completion Time is deemed appropriate.

SURVEILLANCE REQUIREMENTS

SR 3.9.7.1

This Surveillance demonstrates that the required RHR shutdown cooling subsystem is in operation and circulating reactor coolant. The required flow rate is determined by the flow rate necessary to provide sufficient decay heat removal capability. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

SR 3.9.7.2

RHR Shutdown Cooling System piping and components have the potential to develop voids and pockets of entrained gases. Preventing and managing gas intrusion and accumulation is necessary for proper operation of the required RHR shutdown

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.9.7.2 (continued)

cooling subsystem(s) and may also prevent water hammer, pump cavitation, and pumping of noncondensible gas into the reactor vessel.

Selection of RHR Shutdown Cooling System locations susceptible to gas accumulation is based on a review of system design information, including piping and instrumentation drawings, isometric drawings, plan and elevation drawings, and calculations. The design review is supplemented by system walk downs to validate the system high points and to confirm the location and orientation of important components that can become sources of gas or could otherwise cause gas to be trapped or difficult to remove during system maintenance or restoration. Susceptible locations depend on plant and system configuration, such as stand-by versus operating conditions.

The RHR Shutdown Cooling System is OPERABLE when it is sufficiently filled with water. For the RHR SDC piping on the discharge side of the RHR pump, acceptance criteria are established for the volume of accumulated gas at susceptible locations. If accumulated gas is discovered that exceeds the acceptance criteria for the susceptible location (or the volume of accumulated gas at one or more susceptible locations exceeds an acceptance criteria for gas volume in the RHR SDC piping on the discharge side of a pump), the Surveillance is not met. If it is determined by subsequent evaluation that the RHR Shutdown Cooling System is not rendered inoperable by the accumulated gas (i.e., the system is sufficiently filled with water), the Surveillance may be declared met. Accumulated gas should be eliminated or brought within the acceptance criteria limits. Since the RHR SDC piping on the discharge side of the pump is the same as the Low Pressure Coolant Injection piping, performances of surveillances for ECCS TS may satisfy the requirements of this surveillance. For the RHR SDC piping on the suction side of the RHR pump, the surveillance is met by virtue of the performance of operating procedures that ensure that the RHR SDC suction piping is adequately filled and vented. The performance of these manual actions ensures that the surveillance is met.

RHR SDC System locations on the discharge side of the RHR pump susceptible to gas accumulation are monitored and, if gas is found, the gas volume is compared to the acceptance criteria for the location. Susceptible locations in the same system flow path which are subject to the same gas intrusion mechanisms may be verified by monitoring a representative subset of susceptible locations. Monitoring may not be practical for locations that are inaccessible due to radiological or environmental conditions, the plant configuration, or personnel safety.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.9.7.2 (continued)

For these locations alternative methods (e.g., operating parameters, remote monitoring) may be used to monitor the susceptible location. Monitoring is not required for susceptible locations where the maximum potential accumulated gas void volume has been evaluated and determined to not challenge system OPERABILITY. The accuracy of the method used for monitoring the susceptible locations and trending of the results should be sufficient to assure system OPERABILITY during the Surveillance interval.

This SR is modified by a Note clarifying that the SR may be met for a running RHR shutdown cooling subsystem by virtue of having the RHR shutdown cooling subsystem in service in accordance with operating procedures except when the RHR subsystem is in a low flow system operation which could allow the potential of gas voids not transporting through the system and the potential accumulation of gas voids in stagnant branch lines.

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program. The Surveillance Frequency may vary by location susceptible to gas accumulation.

REFERENCES

1. 10 CFR 50, Appendix A, GDC 34.

2. Technical Requirements Manual, Section 8.0.

3. NRC No. 93-102, "Final Policy Statement on Technical Specification Improvements," July 23, 1993.

BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 3.9.8.1

This Surveillance demonstrates that one required RHR shutdown cooling subsystem is in operation and circulating reactor coolant. The required flow rate is determined by the flow rate necessary to provide sufficient decay heat removal capability. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

SR 3.9.8.2

RHR Shutdown Cooling System piping and components have the potential to develop voids and pockets of entrained gases. Preventing and managing gas intrusion and accumulation is necessary for proper operation of the RHR shutdown cooling subsystems and may also prevent water hammer, pump cavitation, and pumping of noncondensible gas into the reactor vessel.

Selection of RHR Shutdown Cooling System locations susceptible to gas accumulation is based on a review of system design information, including piping and instrumentation drawings, isometric drawings, plan and elevation drawings, and calculations. The design review is supplemented by system walk downs to validate the system high points and to confirm the location and orientation of important components that can become sources of gas or could otherwise cause gas to be trapped or difficult to remove during system maintenance or restoration. Susceptible locations depend on plant and system configuration, such as stand-by versus operating conditions.

The RHR Shutdown Cooling System is OPERABLE when it is sufficiently filled with water. For the RHR SDC piping on the discharge side of the RHR pump, acceptance criteria are established for the volume of accumulated gas at susceptible locations. If accumulated gas is discovered that exceeds the acceptance criteria for the susceptible location (or the volume of accumulated gas at one or more susceptible locations exceeds an acceptance criteria for gas volume in the RHR SDC piping on the discharge side of a pump), the Surveillance is not met. If it is determined by subsequent evaluation that the RHR Shutdown Cooling System is not rendered inoperable by the accumulated gas (i.e., the system is sufficiently filled with water), the Surveillance may be declared met. Accumulated gas should be eliminated or brought within the acceptance criteria limits. Since the RHR SDC piping on the discharge side of the pump is the same as the Low Pressure Coolant Injection piping, performances of surveillances for ECCS TS may satisfy the requirements of this

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BASES

SURVEILLANCE REQUIREMENTS

SR 3.9.8.2 (continued)

surveillance. For the RHR SDC piping on the suction side of the RHR pump, the surveillance is met by virtue of the performance of operating procedures that ensure that the RHR SDC suction piping is adequately filled and vented. The performance of these manual actions ensures that the surveillance is met.

RHR SDC System locations on the discharge side of the RHR pump susceptible to gas accumulation are monitored and, if gas is found, the gas volume is compared to the acceptance criteria for the location. Susceptible locations in the same system flow path which are subject to the same gas intrusion mechanisms may be verified by monitoring a representative subset of susceptible locations. Monitoring may not be practical for locations that are inaccessible due to radiological or environmental conditions, the plant configuration, or personnel safety. For these locations alternative methods (e.g., operating parameters, remote monitoring) may be used to monitor the susceptible location. Monitoring is not required for susceptible locations where the maximum potential accumulated gas void volume has been evaluated and determined to not challenge system OPERABILITY. The accuracy of the method used for monitoring the susceptible locations and trending of the results should be sufficient to assure system OPERABILITY during the Surveillance interval.

This SR is modified by a Note clarifying that the SR may be met for a running RHR shutdown cooling subsystem by virtue of having the RHR shutdown cooling subsystem in service in accordance with operating procedures except when the RHR subsystem is in a low flow system operation which could allow the potential of gas voids not transporting through the system and the potential accumulation of gas voids in stagnant branch lines.

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program. The Surveillance Frequency may vary by location susceptible to gas accumulation.

REFERENCES

1. 10 CFR 50, Appendix A, GDC 34.

2. Technical Requirements Manual, Section 8.0.

3. NRC No. 93-102, "Final Policy Statement on Technical

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SURVEILLANCE REQUIREMENTS

SR 3.4.7.1 (continued)

This Surveillance is modified by a Note allowing sufficient time to align the RHR System for shutdown cooling operation after clearing the pressure interlock that isolates the system, or for placing a recirculation pump in operation. The Note takes exception to the requirements of the Surveillance being met (i.e., forced coolant circulation is not required for this initial 2 hour period), which also allows entry into the Applicability of this Specification in accordance with SR 3.0.4 since the Surveillance will not be "not met" at the time of entry into the Applicability.

R 3.4.7.2

RHR Shutdown Cooling System piping and components have the potential to develop voids and pockets of entrained gases. Preventing and managing gas intrusion and accumulation is necessary for proper operation of the RHR shutdown cooling subsystems and may also prevent water hammer, pump cavitation, and pumping of noncondensible gas into the reactor vessel.

Selection of RHR Shutdown Cooling System locations susceptible to gas accumulation is based on a review of system design information, including piping and instrumentation drawings, isometric drawings, plan and elevation drawings, and calculations. The design review is supplemented by system walk downs to validate the system high points and to confirm the location and orientation of important components that can become sources of gas or could otherwise cause gas to be trapped or difficult to remove during system maintenance or restoration. Susceptible locations depend on plant and system configuration, such as stand-by versus operating conditions.

The RHR Shutdown Cooling System is OPERABLE when it is sufficiently filled with water. For the RHR SDC piping on the discharge side of the RHR pump, acceptance criteria are established for the volume of accumulated gas at susceptible locations. If accumulated gas is discovered that exceeds the acceptance criteria for the susceptible location (or the volume of accumulated gas at one or more susceptible locations exceeds an acceptance criteria for gas volume in the RHR SDC piping on the discharge side of a pump), the Surveillance is not met. If it is determined by subsequent evaluation that the RHR Shutdown Cooling System is not rendered inoperable by the accumulated gas (i.e., the system is sufficiently filled with water), the Surveillance may be declared met. Accumulated gas should be eliminated or brought within the acceptance criteria limits. Since the RHR SDC piping on the discharge side of the pump is the same as

(continued)

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SURVEILLANCE REQUIREMENTS

SR 3.4.7.2 (continued)

the Low Pressure Coolant Injection piping, performances of surveillances for ECCS TS may satisfy the requirements of this surveillance. For the RHR SDC piping on the suction side of the RHR pump, the surveillance is met by virtue of the performance of operating procedures that ensure that the RHR SDC suction piping is adequately filled and vented. The performance of these manual actions ensures that the surveillance is met.

RHR SDC System locations on the discharge side of the RHR pump susceptible to gas accumulation are monitored and, if gas is found, the gas volume is compared to the acceptance criteria for the location. Susceptible locations in the same system flow path which are subject to the same gas intrusion mechanisms may be verified by monitoring a representative subset of susceptible locations. Monitoring may not be practical for locations that are inaccessible due to radiological or environmental conditions, the plant configuration, or personnel safety. For these locations alternative methods (e.g., operating parameters, remote monitoring) may be used to monitor the susceptible location. Monitoring is not required for susceptible locations where the maximum potential accumulated gas void volume has been evaluated and determined to not challenge system OPERABILITY. The accuracy of the method used for monitoring the susceptible locations and trending of the results should be sufficient to assure system OPERABILITY during the Surveillance interval.

This SR is modified by Note 1 that states the SR is not required to be performed until 12 hours after reactor steam dome pressure is less than the RHR low pressure permissive pressure. In a rapid shutdown, there may be insufficient time to verify all susceptible locations prior to entering the Applicability.

This SR is modified by Note 2 clarifying that the SR may be met for a running RHR shutdown cooling subsystem by virtue of having the RHR shutdown cooling subsystem in service in accordance with operating procedures except when the RHR subsystem is in a low flow system operation which could allow the potential of gas voids not transporting through the system and the potential accumulation of gas voids in stagnant branch lines.

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program. The Surveillance Frequency may vary by location susceptible to gas accumulation.

REFERENCES

1. NRC No. 93-102, "Final Policy Statement on Technical Specification Improvements," July 23, 1993.

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B.1 and B.2 (continued)

function and is modified such that the 1 hour is applicable separately for each occurrence involving a loss of coolant circulation. Furthermore, verification of the functioning of the alternate method must be reconfirmed every 12 hours thereafter. This will provide assurance of continued temperature monitoring capability.

During the period when the reactor coolant is being circulated by an alternate method (other than by the required RHR shutdown cooling subsystem or recirculation pump), the reactor coolant temperature and pressure must be periodically monitored to ensure proper function of the alternate method. The once per hour Completion Time is deemed appropriate.

SURVEILLANCE REQUIREMENTS

SR 3.4.8.1

This Surveillance verifies that one RHR shutdown cooling subsystem or recirculation pump is in operation and circulating reactor coolant. The required flow rate is determined by the flow rate necessary to provide sufficient decay heat removal capability. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

SR 3.4.8.2

RHR Shutdown Cooling System piping and components have the potential to develop voids and pockets of entrained gases. Preventing and managing gas intrusion and accumulation is necessary for proper operation of the RHR shutdown cooling subsystems and may also prevent water hammer, pump cavitation, and pumping of noncondensible gas into the reactor vessel.

Selection of RHR Shutdown Cooling System locations susceptible to gas accumulation is based on a review of system design information, including piping and instrumentation drawings, isometric drawings, plan and elevation drawings, and calculations. The design review is supplemented by system walk downs to validate the system high points and to confirm the location and orientation of important components that can become sources of gas or could otherwise cause gas to be trapped or difficult to remove during system maintenance or restoration. Susceptible locations depend on plant and system configuration, such as stand-by versus operating conditions.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.8.2 (continued)

The RHR Shutdown Cooling System is OPERABLE when it is sufficiently filled with water. For the RHR SDC piping on the discharge side of the RHR pump, acceptance criteria are established for the volume of accumulated gas at susceptible locations. If accumulated gas is discovered that exceeds the acceptance criteria for the susceptible location (or the volume of accumulated gas at one or more susceptible locations exceeds an acceptance criteria for gas volume in the RHR SDC piping on the discharge side of a pump), the Surveillance is not met. If it is determined by subsequent evaluation that the RHR Shutdown Cooling System is not rendered inoperable by the accumulated gas (i.e., the system is sufficiently filled with water), the Surveillance may be declared met. Accumulated gas should be eliminated or brought within the acceptance criteria limits. Since the RHR SDC piping on the discharge side of the pump is the same as the Low Pressure Coolant Injection piping, performances of surveillances for ECCS TS may satisfy the requirements of this surveillance. For the RHR SDC piping on the suction side of the RHR pump, the surveillance is met by virtue of the performance of operating procedures that ensure that the RHR SDC suction piping is adequately filled and vented. The performance of these manual actions ensures that the surveillance is met.

RHR Shutdown Cooling System locations susceptible to gas accumulation are monitored and, if gas is found, the gas volume is compared to the acceptance criteria for the location. Susceptible locations in the same system flow path which are subject to the same gas intrusion mechanisms may be verified by monitoring a representative sub- set of susceptible locations. Monitoring may not be practical for locations that are inaccessible due to radiological or environmental conditions, the plant configuration, or personnel safety. For these locations alternative methods (e.g., operating parameters, remote monitoring) may be used to monitor the susceptible location. Monitoring is not required for susceptible locations where the maximum potential accumulated gas void volume has been evaluated and determined to not challenge system OPERABILITY. The accuracy of the method used for monitoring the susceptible locations and trending of the results should be sufficient to assure system OPERABILITY during the Surveillance interval.

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BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.8.2 (continued)

This SR is modified by a Note clarifying that the SR may be met for a running RHR shutdown cooling subsystem by virtue of having the RHR shutdown cooling subsystem in service in accordance with operating procedures except when the RHR subsystem is in a low flow system operation which could allow the potential of gas voids not transporting through the system and the potential accumulation of gas voids in stagnant branch lines.

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program. The Surveillance Frequency may vary by location susceptible to gas accumulation.

REFERENCES

1. NRC No. 93-102, "Final Policy Statement on Technical Specification Improvements," July 23, 1993.

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ACTIONS

B.1, B.2, B.3, and B.4 (continued)

isolation capability. The administrative controls can consist of stationing a dedicated operator, who is in continuous communication with the control room, at the controls of the isolation device. In this way, the penetration can be rapidly isolated when a need for secondary containment isolation is indicated.). This may be performed as an administrative check, by examining logs or other information to determine whether the components are out of service for maintenance or other reasons. It is not necessary to perform the Surveillances needed to demonstrate the OPERABILITY of the components. If, however, any required component is inoperable, then it must be restored to OPERABLE status. In this case, a Surveillance may need to be performed to restore the component to OPERABLE status. Actions must continue until all required components are OPERABLE.

C.1 and C.2

If no RHR shutdown cooling subsystem is in operation, an alternate method of coolant circulation is required to be established within 1 hour. The Completion Time is modified such that the 1 hour is applicable separately for each occurrence involving a loss of coolant circulation.

During the period when the reactor coolant is being circulated by an alternate method (other than by the required RHR shutdown cooling subsystem), the reactor coolant temperature must be periodically monitored to ensure proper functioning of the alternate method. The once per hour Completion Time is deemed appropriate.

SURVEILLANCE REQUIREMENTS

SR 3.9.7.1

This Surveillance demonstrates that the required RHR shutdown cooling subsystem is in operation and circulating reactor coolant. The required flow rate is determined by the flow rate necessary to provide sufficient decay heat removal capability. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

SR 3.9.7.2

RHR Shutdown Cooling System piping and components have the potential to develop voids and pockets of entrained gases. Preventing and managing gas intrusion and accumulation is necessary for proper operation of the required RHR shutdown

(continued)

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SURVEILLANCE REQUIREMENTS

SR 3.9.7.2 (continued)

cooling subsystem(s) and may also prevent water hammer, pump cavitation, and pumping of noncondensible gas into the reactor vessel.

Selection of RHR Shutdown Cooling System locations susceptible to gas accumulation is based on a review of system design information, including piping and instrumentation drawings, isometric drawings, plan and elevation drawings, and calculations. The design review is supplemented by system walk downs to validate the system high points and to confirm the location and orientation of important components that can become sources of gas or could otherwise cause gas to be trapped or difficult to remove during system maintenance or restoration. Susceptible locations depend on plant and system configuration, such as stand-by versus operating conditions.

The RHR Shutdown Cooling System is OPERABLE when it is sufficiently filled with water. For the RHR SDC piping on the discharge side of the RHR pump, acceptance criteria are established for the volume of accumulated gas at susceptible locations. If accumulated gas is discovered that exceeds the acceptance criteria for the susceptible location (or the volume of accumulated gas at one or more susceptible locations exceeds an acceptance criteria for gas volume in the RHR SDC piping on the discharge side of a pump), the Surveillance is not met. If it is determined by subsequent evaluation that the RHR Shutdown Cooling System is not rendered inoperable by the accumulated gas (i.e., the system is sufficiently filled with water), the Surveillance may be declared met. Accumulated gas should be eliminated or brought within the acceptance criteria limits. Since the RHR SDC piping on the discharge side of the pump is the same as the Low Pressure Coolant Injection piping, performances of surveillances for ECCS TS may satisfy the requirements of this surveillance. For the RHR SDC piping on the suction side of the RHR pump, the surveillance is met by virtue of the performance of operating procedures that ensure that the RHR SDC suction piping is adequately filled and vented. The performance of these manual actions ensures that the surveillance is met.

RHR SDC System locations on the discharge side of the RHR pump susceptible to gas accumulation are monitored and, if gas is found, the gas volume is compared to the acceptance criteria for the location. Susceptible locations in the same system flow path which are subject to the same gas intrusion mechanisms may be verified by monitoring a representative subset of susceptible locations. Monitoring may not

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SURVEILLANCE REQUIREMENTS

SR 3.9.7.2 (continued)

be practical for locations that are inaccessible due to radiological or environmental conditions, the plant configuration, or personnel safety.

For these locations alternative methods (e.g., operating parameters, remote monitoring) may be used to monitor the susceptible location. Monitoring is not required for susceptible locations where the maximum potential accumulated gas void volume has been evaluated and determined to not challenge system OPERABILITY. The accuracy of the method used for monitoring the susceptible locations and trending of the results should be sufficient to assure system OPERABILITY during the Surveillance interval.

This SR is modified by a Note clarifying that the SR may be met for a running RHR shutdown cooling subsystem by virtue of having the RHR shutdown cooling subsystem in service in accordance with operating procedures except when the RHR subsystem is in a low flow system operation which could allow the potential of gas voids not transporting through the system and the potential accumulation of gas voids in stagnant branch lines.

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program. The Surveillance Frequency may vary by location susceptible to gas accumulation.

REFERENCES

1. 10 CFR 50, Appendix A, GDC 34.

2. Technical Requirements Manual, Section 8.0.

3. NRC N0. 93-102, "Final Policy Statement on Technical Specification Improvements," July 23, 1993.

BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 3.9.8.1

This Surveillance demonstrates that one required RHR shutdown cooling subsystem is in operation and circulating reactor coolant. The required flow rate is determined by the flow rate necessary to provide sufficient decay heat removal capability. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

SR 3.9.8.2

RHR Shutdown Cooling System piping and components have the potential to develop voids and pockets of entrained gases. Preventing and managing gas intrusion and accumulation is necessary for proper operation of the RHR shutdown cooling subsystems and may also prevent water hammer, pump cavitation, and pumping of noncondensible gas into the reactor vessel.

Selection of RHR Shutdown Cooling System locations susceptible to gas accumulation is based on a review of system design information, including piping and instrumentation drawings, isometric drawings, plan and elevation drawings, and calculations. The design review is supplemented by system walk downs to validate the system high points and to confirm the location and orientation of important components that can become sources of gas or could otherwise cause gas to be trapped or difficult to remove during system maintenance or restoration. Susceptible locations depend on plant and system configuration, such as stand-by versus operating conditions.

The RHR Shutdown Cooling System is OPERABLE when it is sufficiently filled with water. For the RHR SDC piping on the discharge side of the RHR pump, acceptance criteria are established for the volume of accumulated gas at susceptible locations. If accumulated gas is discovered that exceeds the acceptance criteria for the susceptible location (or the volume of accumulated gas at one or more susceptible locations exceeds an acceptance criteria for gas volume in the RHR SDC piping on the discharge side of a pump), the Surveillance is not met. If it is determined by subsequent evaluation that the RHR Shutdown Cooling System is not rendered inoperable by the accumulated gas (i.e., the system is sufficiently filled with water), the Surveillance may be declared met. Accumulated gas should be eliminated or brought within the acceptance criteria limits. Since the RHR SDC piping on the discharge side of the pump is the same as the Low Pressure Coolant Injection piping, performances of surveillances for ECCS TS may satisfy the requirements of this

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BASES

SURVEILLANCE REQUIREMENTS

SR 3.9.8.2 (continued)

surveillance. For the RHR SDC piping on the suction side of the RHR pump, the surveillance is met by virtue of the performance of operating procedures that ensure that the RHR SDC suction piping is adequately filled and vented. The performance of these manual actions ensures that the surveillance is met.

RHR SDC System locations on the discharge side of the RHR pump susceptible to gas accumulation are monitored and, if gas is found, the gas volume is compared to the acceptance criteria for the location. Susceptible locations in the same system flow path which are subject to the same gas intrusion mechanisms may be verified by monitoring a representative subset of susceptible locations. Monitoring may not be practical for locations that are inaccessible due to radiological or environmental conditions, the plant configuration, or personnel safety. For these locations alternative methods (e.g., operating parameters, remote monitoring) may be used to monitor the susceptible location. Monitoring is not required for susceptible locations where the maximum potential accumulated gas void volume has been evaluated and determined to not challenge system OPERABILITY. The accuracy of the method used for monitoring the susceptible locations and trending of the results should be sufficient to assure system OPERABILITY during the Surveillance interval.

This SR is modified by a Note clarifying that the SR may be met for a running RHR shutdown cooling subsystem by virtue of having the RHR shutdown cooling subsystem in service in accordance with operating procedures except when the RHR subsystem is in a low flow system operation which could allow the potential of gas voids not transporting through the system and the potential accumulation of gas voids in stagnant branch lines.

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program. The Surveillance Frequency may vary by location susceptible to gas accumulation.

REFERENCES

1. 10 CFR 50, Appendix A, GDC 34.

2. Technical Requirements Manual, Section 8.0.

3. NRC No. 93-102, "Final Policy Statement on Technical Specification Improvements," July 23, 1993.