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SOUTHERN NUCLEAR
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Docket Nos.: 50-348, 50-364
50-424, 50-425

NL-15-2062

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

Joseph M. Farley Nuclear Plant – Units 1 and 2
Vogtle Electric Generating 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-15-0421, *Joseph M. Farley 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 May 12, 2015.

2. SNC Letter NL-15-0422, *Vogtle Electric Generating 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 May 12, 2015.

3. NRC Letter, *Joseph M. Farley Nuclear Plant, Units 1 and 2 – Request for Additional Information (TAC NOS. MF6211 AND MF6212),* dated August 20, 2015.

4. NRC Letter, *Vogtle Electric Generating Plant, Units 1 and 2 – Request for Additional Information on License Amendment Request (TAC NOS. MF6213 AND MF6214),* dated August 24, 2015.

5. SNC Letter NL-15-1665, Joseph M. Farley Nuclear Plant - Units 1and 2 – Request for Additional Information Regarding SNC License Amendment Request for TSTF-523, Revision 2, dated September 15, 2015, ML15258A535.

6. SNC Letter NL-15-1739, Vogtle Electric Generating Plant – Units 1 and 2 – Response to Request for Additional Information Regarding SNC License Amendment Request for TSTF-523, Revision 2, dated September 21, 2015, ML15264A738.

7. NRC Letter, Joseph M. Farley Nuclear Plant, Units 1 and 2 and Vogtle, Units 1 and 2 – Request for Additional Information (CAC NOS. MF6211, MF6212, MF6213, AND MF6214), dated October 29, 2015.

Ladies and Gentlemen:

On May 12, 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 Joseph M. Farley Nuclear Plant (FNP), Units 1 and 2 and Vogtle Electric Generating Plant (VEGP), Units 1 and 2 (References 1 and 2).

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 FNP and VEGP License Amendment Requests, SNC received a request for additional information by the NRC on August 20, 2015 (Reference 3) and on August 24, 2015 (Reference 4). The response to this set of RAIs was addressed in SNC Letters NL-15-1665 and NL-15-1739 (Reference 5 and 6).

The NRC has issued a follow-up set of RAIs asking the same type information for FNP and VEGP (Reference 7). Enclosure 1 provides the requested information. Enclosure 2 provides the replacement pages for the affected LAR FNP and VEGP Technical Specification Marked Up Pages. Enclosure 3 provides the replacement pages for the affected LAR FNP and VEGP Technical Specification Clean Typed Pages. Enclosure 4 of this letter will provide the FNP and VEGP LAR 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
Regulatory Affairs Director

CRP/GLS/lac

Sworn to and subscribed before me this 25th *day of* November, *2015.*

Notary Public

My commission expires: 1/2/2018

Enclosures:
1. Response to Request for Additional Information – TSTF-523
2. FNP and VEGP Technical Specification Marked Up Replacement Pages
3. FNP and VEGP Technical Specification Clean Typed Replacement Pages
4. FNP and VEGP 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
Ms. C. A. Gayheart, Vice President – Farley
Mr. B. K. Taber, Vice President – Vogtle 1 & 2
Mr. D. R. Madison, Vice President – Fleet Operations
Mr. B. J. Adams, Vice President – Engineering
Ms. B. L. Taylor, Regulatory Affairs Manager – Farley
Mr. G. W. Gunn, Regulatory Affairs Manager – Vogtle 1 & 2
RTypes: CFA04.054; CVC7000

U. S. Nuclear Regulatory Commission
Mr. L. D. Wert, Regional Administrator (Acting)
Mr. S. A. Williams, NRR Project Manager – Farley
Mr. R. E. Martin, NRR Senior Project Manager – Vogtle 1 & 2
Mr. P. K. Niebaum, Senior Resident Inspector – Farley
Mr. L. M. Cain, Senior Resident Inspector – Vogtle 1 & 2

Alabama Department of Public Health
Dr. D. E. Williamson, State Health Officer

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Mr. J. H. Turner, Director – Environmental Protection Division

Joseph M. Farley Nuclear Plant – Units 1 and 2
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Response to Second Request for Additional Information Regarding
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Enclosure 1

Response to Request for Additional Information – TSTF-523

By two letters dated May 12, 2015 (Agency wide Documents Access and Management System (ADAMS) Accession Nos. ML15132A722 and ML15132A662), the Southern Nuclear Operating Company, Inc. (SNC), submitted a request to revise the Joseph M. Farley Nuclear Plant, Unit 1 and Unit 2, and the Vogtle Electric Generating Plant, Unit 1 and Unit 2, Technical Specifications (TS) consistent with the U.S. Nuclear Regulatory Commission (NRC) - approved Technical Specification Task Force (TSTF) Traveler 523, Revision 2, "Generic Letter 2008-01, Managing Gas Accumulation."

As part of section 50.36 of Title 10 of the *Code of Federal Regulations* (10 CFR), "Technical Specifications," the licensee is required to provide a "summary statement of the bases or reasons for such specifications" as part of the license amendment request (LAR) submittal. Since the TS bases are part of the LAR submittal, they are utilized as supporting information by the NRC staff during the review of the TS changes. The U.S. Nuclear Regulatory Commission staff has determined that additional information regarding the TS bases is necessary since the application deviated from the approved language in TSTF-523.

RAI No. 1

In multiple sections of the TS bases associated with the Residual Heat Removal (RHR) system (Vogtle 3.4.6, 3.4.7, 3.4.8, 3.9.5, 3.9.6 and Farley 3.4.6, 3.4.7, 3.4.8, 3.9.4, 3.9.5) the TS bases state, "When the RHR System is restored to service, the surveillance is met by virtue of the performance of operating procedures that ensure the RHR Loop is adequately filled and vented. The performance of these manual actions ensures that the surveillance is met." According to the surveillance requirement (SR) language, the SR is met by ensuring the system is "sufficiently filled with water," but this TS bases description indicates that performance of operating procedures satisfies the SR. Please justify how "by virtue of the performance of operating procedures" ensures that the SR acceptance criteria are met for locations susceptible to gas accumulation or, if necessary, revise the TS bases so that they are in agreement with the approved TSTF-523 language.

SNC Response to RA1:

SNC has included all the wording that is consistent with the U.S. Nuclear Regulatory Commission (NRC) - approved Technical Specification Task Force (TSTF) Traveler 523, Revision 2, "Generic Letter 2008-01, Managing Gas Accumulation," in the above mentioned RHR system TS bases sections. The differences that we are discussing in the bases sections for these 3 RAIs is that more wording is added to the bases for clarification to the operators at Farley and Vogtle to ensure that the actions required to meet the SR bases are properly met. Performance of the actions to meet the Gas Accumulation surveillance requirements is driven at these plants by the operating procedures (which does include manual actions) – for example filling and venting, pointers to ensure proper ultrasonic tests are performed and evaluated, guidance to ensure proper flows are maintained in the systems, observation of erratic system performance indicative of voids in the system are identified, precautions taken when cycling system boundary valves, the filling and venting and ultrasonic testing of system piping/components that are voided for maintenance, assurance that any voids found are evaluated/removed to ensure system operability - which includes writing condition reports when needed, etc. This is the process by which the SRs for gas accumulation will have implementation managed to ensure the RHR system is "sufficiently filled with water."

After further consideration of the NRC RAI, it is justified to amend the affected Technical Specification Bases sections (Vogtle 3.4.6, 3.4.7, 3.4.8, 3.9.5, 3.9.6 and Farley 3.4.6, 3.4.7, 3.4.8, 3.9.4, 3.9.5) to replace the wording "When the RHR System is restored to service, the surveillance is met by virtue of the performance of operating procedures that ensure the RHR Loop is adequately filled and vented. The performance of these manual actions ensures that the surveillance is met..." with "Operating procedures direct the implementing actions to meet this SR and ensure the system is sufficiently filled with water..."

Enclosure 4 of this letter will provide the FNP and VEGP Technical Specification Bases Marked Up Replacement Pages (For Information Only).

RAI No. 2

In multiple sections associated with the RHR system (Vogtle 3.4.6, 3.4.7, 3.4.8, 3.9.5, 3.9.6 and Farley 3.4.6, 3.4.7, 3.4.8, 3.9.4, 3.9.5) the TS bases state, "SR may be met for a RHR Loop by virtue of having a loop in service in-accordance with operating procedures." 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. This appears to be an alternative to performing the SR. Please explain how the flowrate of the operating system and the stagnant branch lines are taken into consideration when crediting the in-service loop as meeting the SR. Explain why is it acceptable to describe this approach in the TS bases rather than the TS surveillance. If necessary, revise the TS bases so that they are in agreement with the approved TSTF-523 language.

SNC Response to RA2:

As stated above, SNC has included all the wording that is consistent with the U.S. Nuclear Regulatory Commission (NRC) - approved Technical Specification Task Force (TSTF) Traveler 523, Revision 2, "Generic Letter 2008-01, Managing Gas Accumulation," in the above mentioned RHR system TS bases sections. 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 System Operating Procedure provides operating guidance to maintain the RHR system single loop flow at a high enough flow to ensure proper circulation (not allowing low pump flow). Plant operating experience along with improvements in the reduction of voids as captured in the FNP and VEGP responses to GL 2008-01 makes it prudent to allow a RHR system to continue to run instead of performing a system evolution of securing the RHR system to perform ultrasonic testing and venting for the 31 day surveillance. In fact, the RHR 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). Again, gas accumulation is based on a gradual nature and it is not often that the RHR system would be running when its 31 day surveillance is due. Therefore, accepting a running RHR system as meeting its surveillance, as long as no indications of erratic system operation is observed due to voids, is appropriate due to the controls in place for the system operational flow guidance.

After further consideration of the NRC RAI, it seems prudent to amend the Technical Specifications for the SR's (Vogtle 3.4.6, 3.4.7, 3.4.8, 3.9.5, 3.9.6 and Farley 3.4.6, 3.4.7, 3.4.8, 3.9.4, 3.9.5) with a note and a clarification of this note in the corresponding Technical Bases sections to ensure the RHR subsystem remains sufficiently filled with water stating:

Technical Specification Note:

"Note:
An operating RHR loop will meet this requirement for the RHR loop running unless the RHR loop 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 Loop by virtue of having the RHR Loop in service in accordance with operating procedures except when the RHR Loop 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 FNP and VEGP License Amendment Request (LAR), Reference 1 and 2, replacement pages for the affected Marked Up Technical Specification pages. Enclosure 3 of this letter will provide the FNP and VEGP LAR replacement pages for the affected Clean Typed Technical Specification Pages. Enclosure 4 of this letter will provide the FNP and VEGP Technical Specification Bases Marked Up Replacement Pages (For Information Only).

RAI No. 3

In multiple sections associated with the RHR system (i.e., Vogtle - 3.4.6, 3.4.7, 3.4.8, 3.9.5, 3.9.6, and Farley – 3.4.6, 3.4.7, 3.4.8, 3.9.4, 3.9.5), the TS bases state, "The RHR system is assumed to remain sufficiently filled with water and may be restarted following short term duration RHR shutdowns, if no evolutions were performed that can introduce voids into the RHR loop." This language is not contained in TSTF-523, so please explain how short-term duration is determined by the operators along with its basis. Also, if necessary, revise the TS bases so that they are in agreement with the approved TSTF-523 language.

SNC Response to RA3:

As stated above, SNC has included all the wording that is consistent with the U.S. Nuclear Regulatory Commission (NRC) - approved Technical Specification Task Force (TSTF) Traveler 523, Revision 2, "Generic Letter 2008-01, Managing Gas Accumulation," in the above mentioned RHR system TS bases sections. As is discussed in the LCO notes for the above Technical specification Bases section for RHR there are allowed short term duration times of less than or equal to 1 hour allowed per 8 hour periods or less than or equal to two hours allowed per 8 hour periods to shut down an RHR pump to perform various tests – which include for example:

- to validate various accident analysis such as validation of rod drop times during cold conditions
- permit periodic surveillance tests to be performed on the inoperable loop during the only time when such testing is safe and possible
- permits core mapping or alterations in the vicinity of the reactor vessel hot leg nozzles and RCS to RHR isolation valve testing
- perform the required surveillance testing necessary to verify the RHR System performance in the ECCS injection mode of operation.

The purpose of this clarification note is to provide guidance for the operators during these discussed short duration shutdowns; "The RHR system is assumed to remain sufficiently filled with water and may be restarted following short term duration RHR shutdowns, if no evolutions were performed that can introduce voids into the RHR loop." As per the TSTF-523 Revision 2 traveler, gas accumulation is based on a gradual nature of gas accumulation, the procedural controls governing system operation, and operation experience. With the longest shutdown only being less than or equal 2 hours in an 8 hour period it was prudent to provide this clarification to the FNP and VEGP operators. Again, the sentence is only added for implementation process clarification for the operators and does not diminish the bases of the Surveillance Requirement since the TSTF-523, Revision 2, bases traveler wording is completely included.

SNC response to typo discovered on the FNP (only) Technical Specification Bases mark-up page B 3.5.2-11:

A typo was found in the FNP, Reference 1, Technical Specification Bases mark-up page B 3.5.2-11, in which Section SR 3.5.2.6 section number should actually have been SR 3.5.2.8. Enclosure 4 of this letter will also provide the FNP Technical Specification Bases Marked Up Replacement Page (For Information Only), correcting this typo on page B 3.5.2-11.

Joseph M. Farley Nuclear Plant – Units 1 and 2
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SNC License Amendment Request for TSTF-523, Revision 2

Enclosure 2

FNP and VEGP Technical Specification Marked Up Replacement Pages

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One required RHR loop inoperable. AND Two required RCS loops inoperable.	B.1 Be in MODE 5.	24 hours
C. Required RCS or RHR loops inoperable. OR No RCS or RHR loop in operation.	C.1 Suspend all operations involving a reduction of RCS boron concentration. AND C.2 Initiate action to restore one loop to OPERABLE status and operation.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.4.6.1 Verify one RHR or RCS loop is in operation.	In accordance with the Surveillance Frequency Control Program
SR 3.4.6.2 Verify SG secondary side water levels are ≥ 75% (wide range) for required RCS loops.	In accordance with the Surveillance Frequency Control Program
SR 3.4.6.3 Verify correct breaker alignment and indicated power are available to the required pump that is not in operation. ← Insert SR 3.4.6.4 located on next page	In accordance with the Surveillance Frequency Control Program

Insert as SR 3.4.6.4

SR 3.4.6.4	----------NOTES---------- 1. Not required to be performed until 12 hours after entering MODE 4. 2. An operating RHR loop will meet this requirement for the RHR loop running unless the RHR loop is in a low flow system operation. ---------- Verify required RHR loop locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.4.7.3	Verify correct breaker alignment and indicated power are available to the required RHR pump that is not in operation.	In accordance with the Surveillance Frequency Control Program
SR 3.4.7.4	----------NOTE---------- An operating RHR loop will meet this requirement for the RHR loop running unless the RHR loop is in a low flow system operation. --- Verify required RHR loop 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. Required RHR loops inoperable. OR No RHR loop in operation.	B.1 Suspend all operations involving reduction in RCS boron concentration. AND B.2 Initiate action to restore one RHR loop to OPERABLE status and operation.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.8.1	Verify one RHR loop is in operation.	In accordance with the Surveillance Frequency Control Program
SR 3.4.8.2	Verify correct breaker alignment and indicated power are available to the required RHR pump that is not in operation.	In accordance with the Surveillance Frequency Control Program
SR 3.4.8.3	----------NOTE---------- An operating RHR loop will meet this requirement for the RHR loop running unless the RHR loop is in a low flow system operation. ---------- Verify RHR loop locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. (continued)	A.4	Close equipment hatch and secure with four bolts.	4 hours
	AND		
	A.5	Close one door in each air lock.	4 hours
	AND		
	A.6.1	Close each penetration providing direct access from the containment atmosphere to the outside atmosphere with a manual or automatic isolation valve, blind flange, or equivalent.	4 hours
	OR		
	A.6.2	Verify each penetration is capable of being closed by an OPERABLE Containment Purge and exhaust Isolation System.	4 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.4.1	Verify one RHR loop is in operation and circulating reactor coolant at a flow rate of ≥ 3000 gpm.	In accordance with the Surveillance Frequency Control Program
←	Insert SR 3.9.4.2 located on next page	

Insert as SR 3.9.4.2

SR 3.9.4.2	----------NOTE---------- An operating RHR loop will meet this requirement for the RHR loop running unless the RHR loop is in a low flow system operation. ---------- Verify required RHR loop locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.9.5.1	Verify one RHR loop is in operation and circulating reactor coolant at a flow rate of ≥ 3000 gpm.	In accordance with the Surveillance Frequency Control Program
SR 3.9.5.2	Verify correct breaker alignment and indicated power available to the required RHR pump that is not in operation.	In accordance with the Surveillance Frequency Control Program
SR 3.9.5.3	----------NOTE---------- An operating RHR loop will meet this requirement for the RHR loop running unless the RHR loop is in a low flow system operation. ---------- Verify RHR loop locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.4.6.3	Verify correct pump breaker alignment and indicated power are available to the required pump that is not in operation.	In accordance with the Surveillance Frequency Control Program
SR 3.4.6.4	----------NOTES---------- 1. Not required to be performed until 12 hours after entering MODE 4. 2. An operating RHR loop will meet this requirement for the RHR loop running unless the RHR loop is in a low flow system operation. ---------- Verify required RHR loop locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.4.7.3	Verify correct breaker alignment and indicated power are available to the required RHR pump that is not in operation.	In accordance with the Surveillance Frequency Control Program

SR 3.4.7.4	----------NOTE---------- An operating RHR loop will meet this requirement for the RHR loop running unless the RHR loop is in a low flow system operation. ---------- Verify required RHR loop locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One RHR loop inoperable.	A.1 Initiate action to restore RHR loop to OPERABLE status.	Immediately
B. Required RHR loops inoperable. OR No RHR loop in operation.	B.1 Suspend all operations involving reduction in RCS boron concentration. AND B.2 Initiate action to restore one RHR loop to OPERABLE status and to operation.	Immediately Immediately
C. One or more valves used to isolate unborated water sources not secured in closed position.	C.1 Initiate action to secure valve(s) in closed position.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.8.1	Verify one RHR loop is in operation.	In accordance with the Surveillance Frequency Control Program
SR 3.4.8.2	Verify correct breaker alignment and indicated power are available to the required RHR pump that is not in operation.	In accordance with the Surveillance Frequency Control Program
SR 3.4.8.3	Verify each valve that isolates unborated water sources is secured in the closed position.	In accordance with the Surveillance Frequency Control Program

Insert SR 3.4.8.4 located on next page

Insert as SR 3.4.8.4

SR 3.4.8.4	----------NOTE---------- An operating RHR loop will meet this requirement for the RHR loop running unless the RHR loop is in a low flow system operation. ---------- Verify RHR loop locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.4 Close all containment penetrations providing direct access from containment atmosphere to outside atmosphere.	4 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.5.1	Verify one RHR loop is in operation and circulating reactor coolant at a flow rate of ≥ 3000 gpm.	In accordance with the Surveillance Frequency Control Program
SR 3.9.5.2	----------NOTE---------- An operating RHR loop will meet this requirement for the RHR loop running unless the RHR loop is in a low flow system operation. ---------- Verify required RHR loop 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.2 Initiate action to restore one RHR loop to operation. AND	Immediately
	B.3 Close all containment penetrations providing direct access from containment atmosphere to outside atmosphere.	4 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.6.1	Verify one RHR loop is in operation and circulating reactor coolant at a flow rate of ≥ 3000 gpm.	In accordance with the Surveillance Frequency Control Program
SR 3.9.6.2	----------NOTE---------- An operating RHR loop will meet this requirement for the RHR loop running unless the RHR loop is in a low flow system operation. ---------- Verify RHR loop locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program

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Enclosure 3

FNP and VEGP Technical Specification Clean Typed Replacement Pages

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.6.4	----------NOTES---------- 1. Not required to be performed until 12 hours after entering MODE 4. 2. An operating RHR loop will meet this requirement for the RHR loop running unless the RHR loop is in a low flow system operation. ---------- Verify required RHR loop locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.4.7.3	Verify correct breaker alignment and indicated power are available to the required RHR pump that is not in operation.	In accordance with the Surveillance Frequency Control Program
SR 3.4.7.4	----------NOTE---------- An operating RHR loop will meet this requirement for the RHR loop running unless the RHR loop is in a low flow system operation. ---------- Verify required RHR loop 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. Required RHR loops inoperable. OR No RHR loop in operation.	B.1 Suspend all operations involving reduction in RCS boron concentration. AND B.2 Initiate action to restore one RHR loop to OPERABLE status and operation.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.8.1	Verify one RHR loop is in operation.	In accordance with the Surveillance Frequency Control Program
SR 3.4.8.2	Verify correct breaker alignment and indicated power are available to the required RHR pump that is not in operation.	In accordance with the Surveillance Frequency Control Program
SR 3.4.8.3	----------NOTE---------- An operating RHR loop will meet this requirement for the RHR loop running unless the RHR loop is in a low flow system operation. ---------- Verify RHR loop locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.4.2	----------NOTE---------- An operating RHR loop will meet this requirement for the RHR loop running unless the RHR loop is in a low flow system operation. ---------- Verify required RHR loop locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.9.5.1	Verify one RHR loop is in operation and circulating reactor coolant at a flow rate of ≥ 3000 gpm.	In accordance with the Surveillance Frequency Control Program
SR 3.9.5.2	Verify correct breaker alignment and indicated power available to the required RHR pump that is not in operation.	In accordance with the Surveillance Frequency Control Program
SR 3.9.5.3	----------NOTE---------- An operating RHR loop will meet this requirement for the RHR loop running unless the RHR loop is in a low flow system operation. ---------- Verify RHR loop locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.4.6.3	Verify correct pump breaker alignment and indicated power are available to the required pump that is not in operation.	In accordance with the Surveillance Frequency Control Program
SR 3.4.6.4	----------NOTES---------- 1. Not required to be performed until 12 hours after entering MODE 4. 2. An operating RHR loop will meet this requirement for the RHR loop running unless the RHR loop is in a low flow system operation. ---------- Verify required RHR loop locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.4.7.3	Verify correct breaker alignment and indicated power are available to the required RHR pump that is not in operation.	In accordance with the Surveillance Frequency Control Program
SR 3.4.7.4	----------NOTE---------- An operating RHR loop will meet this requirement for the RHR loop running unless the RHR loop is in a low flow system operation. ---------- Verify required RHR loop locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.4.8.4	----------NOTE---------- An operating RHR loop will meet this requirement for the RHR loop running unless the RHR loop is in a low flow system operation. ---------- Verify RHR loop locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.4 Close all containment penetrations providing direct access from containment atmosphere to outside atmosphere.	4 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.5.1	Verify one RHR loop is in operation and circulating reactor coolant at a flow rate of ≥ 3000 gpm.	In accordance with the Surveillance Frequency Control Program
SR 3.9.5.2	----------NOTE---------- An operating RHR loop will meet this requirement for the RHR loop running unless the RHR loop is in a low flow system operation. ---------- Verify required RHR loop 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.2 Initiate action to restore one RHR loop to operation. AND	Immediately
	B.3 Close all containment penetrations providing direct access from containment atmosphere to outside atmosphere.	4 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.6.1	Verify one RHR loop is in operation and circulating reactor coolant at a flow rate of ≥ 3000 gpm.	In accordance with the Surveillance Frequency Control Program
SR 3.9.6.2	----------NOTE---------- An operating RHR loop will meet this requirement for the RHR loop running unless the RHR loop is in a low flow system operation. ---------- Verify RHR loop locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program

Joseph M. Farley Nuclear Plant – Units 1 and 2
Vogtle Electric Generating Plant – Units 1 and 2
Response to Second Request for Additional Information Regarding
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Enclosure 4

FNP and VEGP Technical Specification Bases Marked Up Replacement Pages
(For Information Only)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.4.6.2

SR 3.4.6.2 requires verification of SG OPERABILITY. SG OPERABILITY is verified by ensuring that the secondary side wide range water level is ≥ 75%. If the SG secondary side wide range water level is < 75%, the tubes may become uncovered and the associated loop may not be capable of providing the heat sink necessary for removal of decay heat. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

SR 3.4.6.3

Verification that the required pump is OPERABLE ensures that an additional RCS or RHR pump can be placed in operation, if needed, to maintain decay heat removal and reactor coolant circulation. Verification is performed by verifying proper breaker alignment and power available to the required pump. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

SR 3.4.6.4

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

Selection of RHR 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 System is OPERABLE when it is sufficiently filled with water. 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 at the suction or discharge of a pump), the Surveillance is not met. If it

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.6.4 (continued)

is determined by subsequent evaluation that the RHR 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. Operating procedures direct the implementing actions to meet this SR and ensure the system is sufficiently filled with water.

RHR 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.

The RHR system is assumed to remain sufficiently filled with water and may be restarted following short term duration RHR shutdowns, if no evolutions were performed that can introduce voids into the RHR loop.

This SR is modified by a Note 1 that states the SR is not required to be performed until 12 hours after entering MODE 4. In a rapid shutdown, there may be insufficient time to verify all susceptible locations prior to entering MODE 4.

This SR is modified by a Note 2 clarifying that the SR may be met for a running RHR Loop by virtue of having the RHR Loop in service in accordance with operating procedures except when the RHR Loop 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 None.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.7.1

This SR requires verification that the required loop is in operation. Verification includes flow rate, temperature, or pump status monitoring, which help ensure that forced flow is providing heat removal.

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

SR 3.4.7.2

Verifying that at least two SGs are OPERABLE by ensuring their secondary side wide range water levels are ≥ 75% ensures an alternate decay heat removal method via natural circulation in the event that the second RHR loop is not OPERABLE. If both RHR loops are OPERABLE, this Surveillance is not needed. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

SR 3.4.7.3

Verification that a second RHR pump is OPERABLE ensures that an additional pump can be placed in operation, if needed, to maintain decay heat removal and reactor coolant circulation. Verification is performed by verifying proper breaker alignment and power available to the RHR pump. If secondary side water level is ≥ 75% (wide range) in at least two SGs, this Surveillance is not needed. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

SR 3.4.7.4

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

Selection of RHR 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

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.7.4 (continued)

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 System is OPERABLE when it is sufficiently filled with water. 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 at the suction or discharge of a pump), the Surveillance is not met. If it is determined by subsequent evaluation that the RHR 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. Operating procedures direct the implementing actions to meet this SR and ensure the system is sufficiently filled with water.

RHR 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 f or monitoring the susceptible locations and trending of the results should be sufficient to assure system OPERABILITY during the Surveillance interval.

The RHR system is assumed to remain sufficiently filled with water and may be restarted following short term duration RHR shutdowns, if no evolutions were performed that can introduce voids into the RHR loop.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.7.4 (continued)

This SR is modified by a Note clarifying that the SR may be met for a running RHR Loop by virtue of having the RHR Loop in service in accordance with operating procedures except when the RHR Loop 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 Information Notice 95-35, "Degraded Ability of Steam Generators to Remove Decay Heat by Natural Circulation."

BASES

ACTIONS (continued)

B.1 and B.2

If no required RHR loops are OPERABLE or in operation, except during conditions permitted by Note 1, all operations involving a reduction of RCS boron concentration must be suspended and action must be initiated immediately to restore an RHR loop to OPERABLE status and operation. Boron dilution requires forced circulation for uniform dilution, and the margin to criticality must not be reduced in this type of operation. The immediate Completion Time reflects the importance of maintaining operation for heat removal. The action to restore must continue until one loop is restored to OPERABLE status and operation.

SURVEILLANCE REQUIREMENTS

SR 3.4.8.1

This SR requires verification that one loop is in operation. Verification includes flow rate, temperature, or pump status monitoring, which help ensure that forced flow is providing heat removal. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

SR 3.4.8.2

Verification that the required number of pumps are OPERABLE ensures that additional pumps can be placed in operation, if needed, to maintain decay heat removal and reactor coolant circulation. Verification is performed by verifying proper breaker alignment and power available to the required pumps. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

SR 3.4.8.3

RHR 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 loops and may also prevent water hammer, pump cavitation, and pumping of noncondensable gas into the reactor vessel.

Selection of RHR 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

(continued)

SURVEILLANCE REQUIREMENTS

SR 3.4.8.3 (continued)

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 g as 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 System is OPERABLE when it is sufficiently filled with water. Acceptance criteria are established f or 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 at the suction or discharge of a pump), the Surveillance is not met. If it is determined by subsequent evaluation that the RHR 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. Operating procedures direct the implementing actions to meet this SR and ensure the system is sufficiently filled with water.

RHR 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 OPERABILIT Y during the Surveillance interval.

The RHR system is assumed to remain sufficiently filled with water and may be restarted following short term duration RHR shutdowns, if no evolutions were performed that can introduce voids into the RHR loop.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.8.3 (continued)

This SR is modified by a Note clarifying that the SR may be met for a running RHR Loop by virtue of having the RHR Loop in service in accordance with operating procedures except when the RHR Loop 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.

SURVEILLANCE REQUIREMENTS (continued)

SR 3.5.2.8

locations depend on plant and system configuration, such as stand-by versus operating conditions.

The ECCS is OPERABLE when it is sufficiently filled with water. 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 at the suction or discharge of a pump), the Surveillance is not met. If it is determined by subsequent evaluation that the ECCS 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.

ECCS 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 the 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.

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

BASES

ACTIONS

A.4, A.5, A.6.1, and A.6.2 (continued)

With RHR loop requirements not met, the potential exists for the coolant to boil and release radioactive gas to the containment atmosphere. Performing the actions described above ensures that all containment penetrations are either closed or can be closed so that the dose limits are not exceeded.

The Completion Time of 4 hours allows fixing of most RHR problems and is reasonable, based on the low probability of the coolant boiling in that time.

SURVEILLANCE REQUIREMENTS

SR 3.9.4.1

This Surveillance demonstrates that the RHR loop is in operation and circulating reactor coolant. The flow rate is determined by the flow rate necessary to provide sufficient decay heat removal capability and to prevent thermal and boron stratification in the core. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

SR 3.9.4.2

RHR 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 loops and may also prevent water hammer, pump cavitation, and pumping of noncondensible gas into the reactor vessel.

Selection of RHR 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 3.9.4.2 (continued)

The RHR System is OPERABLE when it is sufficiently filled with water. 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 at the suction or discharge of a pump), the Surveillance is not met. If it is determined by subsequent evaluation that the RHR 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. Operating procedures direct the implementing actions to meet this SR and ensure the system is sufficiently filled with water.

RHR System locations susceptible to g as accumulation are monitored and, if gas is found, the gas volume is compared to the acceptance criteria f or the location. Susceptible locations in the same system f low path which are subject to the same g as intrusion mechanisms may be verified by monitoring a representative sub-set of susceptible locations. Monitoring may not be practical f or 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 f or 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.

The RHR system is assumed to remain sufficiently filled with water and may be restarted following short term duration RHR shutdowns, if no evolutions were performed that can introduce voids into the RHR loop.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.9.4.2 (continued)

This SR is modified by a Note clarifying that the SR may be met for a running RHR Loop by virtue of having the RHR Loop in service in accordance with operating procedures except when the RHR Loop 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. FSAR, Section 5.5.7.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.9.5.2

Verification that the required pump is OPERABLE ensures that an additional RCS or RHR pump can be placed in operation, if needed, to maintain decay heat removal and reactor coolant circulation. Verification is performed by verifying proper breaker alignment and power available to the required pump. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

SR 3.9.5.3

RHR 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 loops and may also prevent water hammer, pump cavitation, and pumping of noncondensible gas into the reactor vessel.

Selection of RHR 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 System is OPERABLE when it is sufficiently filled with water. 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 at the suction or discharge of a pump), the Surveillance is not met. If it is determined by subsequent evaluation that the RHR 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. Operating procedures direct the implementing actions to meet this SR and ensure the system is sufficiently filled with water.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.9.5.3 (continued)

RHR 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 accuracyof the method used for monitoring the susceptible locations and trending of the results should be sufficient to assure system OPERABILITY during the Surveillance interval.

The RHR system is assumed to remain sufficiently filled with water and may be restarted following short term duration RHR shutdowns, if no evolutions were performed that can introduce voids into the RHR loop.

This SR is modified by a Note clarifying that the SR may be met for a running RHR Loop by virtue of having the RHR Loop in service in accordance with operating procedures except when the RHR Loop 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. FSAR, Section 5.5.7.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.4.6.2

SR 3.4.6.2 requires verification of SG OPERABILITY. SG OPERABILITY is verified by ensuring that the secondary side water level (LI-0501, LI-0502, LI-0503, LI-0504) for the required RCS loops is above the highest point of the steam generator U-tubes for each required loop. To assure that the steam generator is capable of functioning as a heat sink for the removal of decay heat, the U-tubes must be completely submerged. Plant procedures provide the minimum indicated levels for the range of the steam generator operating conditions required to satisfy this SR. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

SR 3.4.6.3

Verification that the required pump is OPERABLE ensures that an additional RCS or RHR pump can be placed in operation, if needed, to maintain decay heat removal and reactor coolant circulation. Verification is performed by verifying proper pump breaker alignment and power available to the required pump. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

SR 3.4.6.4

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

Selection of RHR 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 (continued)

SR 3.4.6.4

The RHR System is OPERABLE when it is sufficiently filled with water. 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 at the suction or discharge of a pump), the Surveillance is not met. If it is determined by subsequent evaluation that the RHR 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. Operating procedures direct the implementing actions to meet this surveillance requirement and ensure the system is sufficiently filled with water.

RHR 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.

The RHR system is assumed to remain sufficiently filled with water and may be restarted following short term duration RHR shutdowns, if no evolutions were performed that can introduce voids into the RHR loop.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.4.6.4

This SR is modified by Note 1 that states the SR is not required to be performed until 12 hours after entering MODE 4. In a rapid shutdown, there may be insufficient time to verify all susceptible locations prior to entering MODE 4.

This SR is modified by Note 2 clarifying that the SR may be met for a running RHR Loop by virtue of having the RHR Loop in service in accordance with operating procedures except when the RHR Loop 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 None.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.7.3 (continued)

Verification is performed by verifying proper breaker alignment and power available to the RHR pump. If secondary side water level is above the highest point of the SG U-tubes in at least two SGs, this Surveillance is not needed. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

SR 3.4.7.4

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

Selection of RHR 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 System is OPERABLE when it is sufficiently filled with water. 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 at the suction or discharge of a pump), the Surveillance is not met. If it is determined by subsequent evaluation that the RHR 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. Operating procedures direct the implementing actions to meet this surveillance requirement and ensure the system is sufficiently filled with water.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.7.4 (continued)

RHR 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 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.

The RHR system is assumed to remain sufficiently filled with water and may be restarted following short term duration RHR shutdowns, if no evolutions were performed that can introduce voids into the RHR loop.

This SR is modified by a Note clarifying that the SR may be met for a running RHR Loop by virtue of having the RHR Loop in service in accordance with operating procedures except when the RHR Loop 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 None.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.4.8.3

Verification that the required valve(s) are closed (except as provided in Note 3 to the LCO) will preclude an uncontrolled boron dilution event in MODE 5 with the RCS loops not filled. Since these valves are required to be secured in position, a frequency of 31 days is sufficient to ensure that they remain closed as required.

SR 3.4.8.4

RHR 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 loops and may also prevent water hammer, pump cavitation, and pumping of noncondensible gas into the reactor vessel.

Selection of RHR 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 System is OPERABLE when it is sufficiently filled with water. 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 at the suction or discharge of a pump), the Surveillance is not met. If it is determined by subsequent evaluation that the RHR 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. Operating procedures direct the implementing actions to meet this surveillance requirement and ensure the system is sufficiently filled with water.

continued

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.4.8.4

RHR 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.

The RHR system is assumed to remain sufficiently filled with water and may be restarted following short term duration RHR shutdowns, if no evolutions were performed that can introduce voids into the RHR loop.

This SR is modified by a Note clarifying that the SR may be met for a running RHR Loop by virtue of having the RHR Loop in service in accordance with operating procedures except when the RHR Loop 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. FSAR, Subsection 15.4.6.

BASES

ACTIONS

A.3 (continued)

water level ≥ 23 ft above the top of the reactor vessel flange, corrective actions shall be initiated immediately.

A.4

If RHR loop requirements are not met, all containment penetrations providing direct access from the containment atmosphere to the outside atmosphere must be closed within 4 hours. With the RHR loop requirements not met, the potential exists for the coolant to boil and release radioactive gas to the containment atmosphere. Closing containment penetrations that are open to the outside atmosphere ensures dose limits are not exceeded.

The Completion Time of 4 hours is reasonable, based on the low probability of the coolant boiling in that time.

SURVEILLANCE REQUIREMENTS

SR 3.9.5.1

This Surveillance demonstrates that the RHR loop is in operation and circulating reactor coolant. The flow rate (FIC-0618A and FIC-0619A) is determined by the flow rate necessary to provide sufficient decay heat removal capability and to provide mixing of the borated coolant to prevent thermal and boron stratification in the core. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

SR 3.9.5.2

RHR 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 loops and may also prevent water hammer, pump cavitation, and pumping of noncondensible gas into the reactor vessel.

Selection of RHR 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

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.9.5.2 (continued)

to remove during system maintenance or restoration. Susceptible locations depend on plant and system configuration, such as stand-by versus operating conditions.

The RHR System is OPERABLE when it is sufficiently filled with water. 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 at the suction or discharge of a pump), the Surveillance is not met. If it is determined by subsequent evaluation that the RHR 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. Operating procedures direct the implementing actions to meet this surveillance requirement and ensure the system is sufficiently filled with water.

RHR 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.

The RHR system is assumed to remain sufficiently filled with water and may be restarted following short term duration RHR shutdowns, if no evolutions were performed that can introduce voids into the RHR loop.

This SR is modified by a Note clarifying that the SR may be met for a running RHR Loop by virtue of having the RHR Loop in service in accordance with operating procedures except when the RHR Loop 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 REQUREMENTS

SR 3.9.5.2 (continued)

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

REFERENCES NONE

BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 3.9.6.1

This Surveillance demonstrates that one RHR loop is in operation and circulating reactor coolant. The flow rate is determined by the flow rate necessary to provide sufficient decay heat removal capability and to provide mixing of the borated coolant to prevent thermal and boron stratification in the core. In addition, during operation of the RHR loop with the water level in the vicinity of the reactor vessel nozzles, the RHR pump suction requirements must be met. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

SR 3.9.6.2

RHR 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 loops and may also prevent water hammer, pump cavitation, and pumping of noncondensible gas into the reactor vessel.

Selection of RHR 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 System is OPERABLE when it is sufficiently filled with water. 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 at the suction or discharge of a pump), the Surveillance is not met. If it is determined by subsequent evaluation that the RHR 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. Operating procedures direct the implementing actions to meet this surveillance requirement and ensure the system is sufficiently filled with water.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.9.6.2 (continued)

RHR System locations susceptible to gas accumulation are monitored and, if gas is found, the gas volume is compared to the acceptance criteria f or the location. Susceptible locations in the same system f low 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 f or 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.

The RHR system is assumed to remain sufficiently filled with water and may be restarted following short term duration RHR shutdowns, if no evolutions were performed that can introduce voids into the RHR loop.

This SR is modified by a Note clarifying that the SR may be met for a running RHR Loop by virtue of having the RHR Loop in service in accordance with operating procedures except when the RHR Loop 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 NONE