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10 CFR 50.90

March 5, 2020

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

R. E. Ginna Nuclear Power Plant
Renewed Facility Operating License No. DPR-18
NRC Docket No. 50-244

Subject: Supplemental Information Associated with the License Amendment Request to Add a One-Time Note for Use of Alternate Residual Heat Removal Methods

Reference 1. Letter from S. Rafferty-Czincila (Exelon Generation Company, LLC) to U.S. Nuclear Regulatory Commission, "License Amendment Request to Add a One-Time Note for Use of Alternate Residual Heat Removal Methods," dated February 25, 2020

In the Reference 1 letter, Exelon Generation Company, LLC (EGC) requested changes to the Technical Specifications (TS) of the R. E. Ginna Nuclear Power Plant (Ginna). EGC proposed to revise TS 3.4.7 ("RCS Loops - MODE 5, Loops Filled"), TS 3.4.8 ("RCS Loops - MODE 5, Loops Not Filled"), TS 3.9.4 ("Residual Heat Removal (RHR) and Coolant Circulation - Water Level ≥ 23 Ft"), and TS 3.9.5 ("Residual Heat Removal (RHR) and Coolant Circulation - Water Level < 23 Ft") to add an asterisk to allow the use of alternate means for residual heat removal. Detailed descriptions of the alternatives were provided in the Technical Evaluation. This one-time change was requested to support the station in the shutdown of the reactor during the upcoming refueling outage scheduled to start in April 2020.

In a March 2, 2020 public meeting with the U.S. Nuclear Regulatory Commission (Attachment 1 contains the EGC meeting participants), EGC was requested to supplement the Reference 1 submittal with additional information. Attachment 2 contains our response to this request. Attachment 3 contains revised Technical Specification pages.

EGC has reviewed the information supporting a finding of no significant hazards consideration, and the environmental consideration, that were previously provided to the NRC in the Reference 1 letter. The supplemental information provided in this response does not affect the bases for concluding that the proposed license amendment does not involve a significant hazards consideration under the standards set forth in 10 CFR 50.92. In addition, EGC has concluded that the information provided in this supplemental response does not affect the bases for concluding that neither an environmental impact statement nor an environmental assessment needs to be prepared in connection with the proposed amendment.

There are no regulatory commitments contained in this submittal. Should you have any questions concerning this submittal, please contact Tom Loomis at (610) 765-5510.

I declare under penalty of perjury that the foregoing is true and correct. This statement was executed on the 5th day of March 2020.

Respectfully,

Shannon Rafferty-Czincila
Director - Licensing
Exelon Generation Company, LLC

Attachments:
1. List of Public Meeting Attendees
2. Supplemental Information
3. Revised Markup of Proposed Technical Specifications Pages

cc: NRC Regional Administrator, Region I
NRC Senior Resident Inspector, Ginna
NRC Project Manager, Ginna
A. L. Peterson, NYSERDA

Attachment 1
List of Public Meeting Attendees

Exelon Generation Company, LLC Participants

Paul Swift, Site Vice President
Daren Blankenship, Plant Manager
Mark Geckle, Director, Organizational Performance and Regulatory Assurance
Jarred Jackson, Ginna Senior Manager Engineering
Justin Knowles, Senior Manager Operations Support & Services
Damon Peters, Senior Staff Engineer
James Breunig, Manager Engineering
George Wrobel, Regulatory Assurance Manager
Tom Loomis, Principle Regulatory Engineer
Jessie Hodge, Senior Regulatory Engineer
Antoinette Walter, Senior Regulatory Engineer

Attachment 2
Supplemental Information

Question:

"1. Consider realigning the * and note to ensure changes in upward Modes are not allowed."
"2. Consider adding the word 'approved' in the * note before the term 'alternate means of RHR'."

Response:

A revised markup of Technical Specification pages which includes these changes is provided in Attachment 3.

Question:

"3. Provide performance details for the alternate RHR flow."

Response:

The following is supplemental information for Section "3.0 Technical Evaluation," which provides performance details for the alternate RHR flow.

The modification that would be installed to facilitate the “Alternate RHR Cooling #1” (Figure 2 in the License Amendment Request dated February 25, 2020) includes the use of stainless steel hose between the tees that would be installed between 721 and 720, and between 700 and 701. This hose run is approximately 150 feet and is longer than the run that would be required to implement “Alternate RHR Cooling #2” (Figure 3 of the License Amendment Request). By increasing the suction length and using stainless steel hose, the suction losses would be greater than the existing system. An evaluation was completed to demonstrate that adequate flow would still be achieved. The limiting condition for RHR flow would be during Reactor Coolant System drain down following installation of the modification and cooldown. In this condition, the Reactor Coolant System is vented, and the Reactor Coolant Pump is shut off. The drain down is to reactor vessel flange level to facilitate the reactor head removal in preparation for refueling. At this level in the Reactor Coolant System, the RHR pump flow is limited by Net Positive Suction Head (NPSH) to ~2125 gpm. With both RHR and Component Cooling Water (CCW) heat exchangers aligned, the heat removal capability at a Reactor Coolant System temperature of 140°F has been calculated to be 45 MBTU/hr with the expected lake temperature conditions of ~45°F. This corresponds to a decay heat less than 12 hours post-shutdown (see decay heat table below). Since the modification would take several days to install, the decay heat would be reduced to a much lower value by the time the modification is installed.

Prior to shutting the Reactor Coolant Pump off, the Reactor Coolant System is pressurized above 220 psig to maintain the required Reactor Coolant Pump seal differential pressure. There is no concern with NPSH available to the RHR pumps with Reactor Coolant System pressure elevated above 220 psig. Previous evaluations performed for Ginna’s extended power uprate (EPU) in 2006 used a minimum flow of 1500 gpm per pump under these conditions with a Reactor Coolant Pump running. This was determined to be more than enough for cooldown. The pumps would remain capable of exceeding 1500 gpm each when run in parallel with the RCS pressurized.

Decay Heat Table

Time after Shutdown (hours)	Decay Heat Rate (MBTU/hr)
12	39.7
15	37.4
20	34.7
25	32.7
30	31.1
35	29.9
40	28.9
45	28.0
50	27.2
60	25.9
70	24.9
80	24.0
90	23.3
100	22.7
120	21.6

Question:

"4. Add a figure into the License Amendment Request Technical Evaluation for the solid Steam Generator cooldown flowpath, as well as a table comparing Reactor Coolant Pump and decay heat loads with the capacity of the condensate cooling method."

Response:

The following is supplemental information for the Section "3.0 Technical Evaluation."

Figure 1 shows the water-solid Steam Generator cooldown flow path. The decay heat loads are shown above in the response to Question 3, and the heat addition due to a Reactor Coolant Pump running is 17.1 MBTU/hr. The condensate cooler was determined to be capable of removing 53.9 MBTU/hr at peak summer conditions (conservative for this evaluation due to higher assumed cooling water temperature) with the Reactor Coolant System at 300°F; therefore, the heat removal with a Reactor Coolant Pump running will match decay heat at approximately 16 hours post-shutdown. This is the expected time that water-solid Steam Generator cooldown would be initiated.

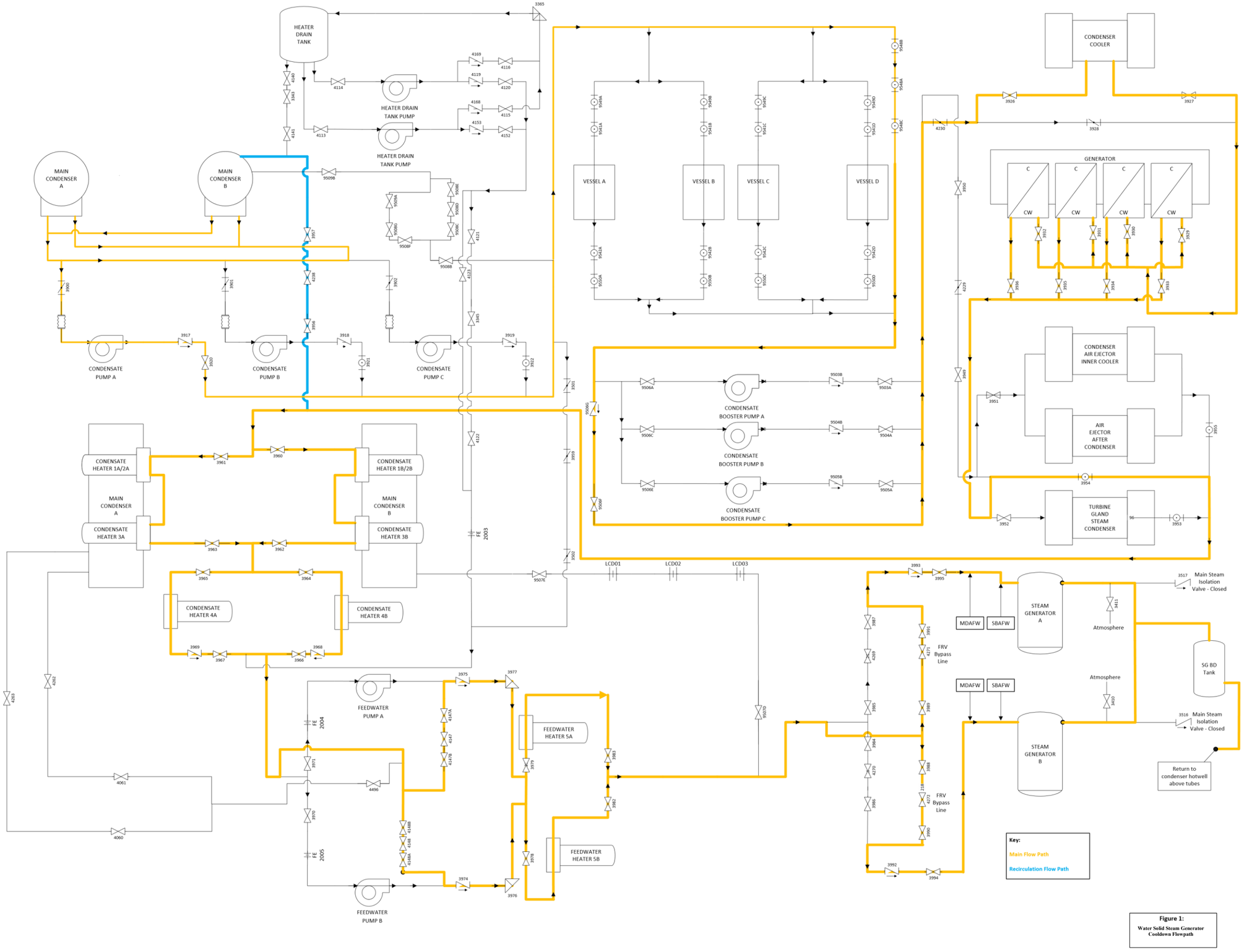

Figure 1:
Water Solid Steam Generator Cooldown Flowpath

Attachment 3
Revised Markup of Proposed Technical Specifications Pages

TECHNICAL SPECIFICATIONS PAGES

3.4.7-1
3.4.7-2 (information only)
3.4.8-1
3.4.8-2 (information only)
3.9.4-1
3.9.4-2 (information only)
3.9.5-1
3.9.5-2 (information only)

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.7 RCS Loops - MODE 5, Loops Filled

LCO 3.4.7 One residual heat removal (RHR) loop shall be OPERABLE and in operation, and either:*

a. One additional RHR loop shall be OPERABLE;* or

b. The secondary side water level of at least one steam generator (SG) shall be ≥ 16%.

- NOTE -

1. The RHR pump of the loop in operation may be de-energized for ≤ 1 hour per 8 hour period provided:

   a. No operations are permitted that would cause introduction of coolant into the RCS with boron concentration less than required to meet the SDM of LCO 3.1.1; and

   b. Core outlet temperature is maintained at least 10°F below saturation temperature.

2. One required RHR loop may be inoperable for ≤ 2 hours for surveillance testing provided that the other RHR loop is OPERABLE and in operation.

3. No reactor coolant pump shall be started with one or more RCS cold leg temperatures less than or equal to the LTOP enable temperature specified in the PTLR unless:

   a. The secondary side water temperature of each SG is ≤ 50°F above each of the RCS cold leg temperatures; or

   b. The pressurizer water volume is < 324 cubic feet (38% level).

4. All RHR loops may be removed from operation during planned heatup to MODE 4 when at least one RCS loop is in operation.

APPLICABILITY: MODE 5 with RCS loops filled.

* Beginning April 1, 2020, an alternate approved means of RHR may be provided until June 30, 2020. No increase in Mode changes will be permitted while utilizing the alternate approved means of RHR.

ACTIONS

CONDITION		REQUIRED ACTION		COMPLETION TIME
A.	One RHR loop inoperable. AND Both SGs secondary side water levels not within limits.	A.1	Initiate action to restore a second RHR loop to OPERABLE status. OR	Immediately
		A.2	Initiate action to restore required SG secondary side water levels to within limits.	Immediately
B.	Both RHR loops inoperable. OR No RHR loop in operation.	B.1	Suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet the SDM of LCO 3.1.1. AND	Immediately
		B.2	Initiate action to restore one RHR loop to OPERABLE status and operation.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.7.1	Verify one RHR loop is in operation.	In accordance with the Surveillance Frequency Control Program
SR 3.4.7.2	Verify SG secondary side water level is ≥ 16% in the required SG.	In accordance with the Surveillance Frequency Control Program
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	Verify required RHR loop locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.8 RCS Loops - MODE 5, Loops Not Filled

LCO 3.4.8 Two residual heat removal (RHR) loops shall be OPERABLE and one RHR loop shall be in operation. [*]

- NOTE -

1. All RHR pumps may be de-energized for ≤ 15 minutes when switching from one loop to another provided:

   a. No operations are permitted that would cause introduction of coolant into the RCS with boron concentration less than required to meet the SDM of LCO 3.1.1; and

   b. Core outlet temperature is maintained at least 10°F below saturation temperature; and

   c. No draining operations to further reduce the RCS water volume are permitted.

2. One RHR loop may be inoperable for ≤ 2 hours for surveillance testing provided that the other RHR loop is OPERABLE and in operation.

APPLICABILITY: MODE 5 with RCS loops not filled.

ACTIONS

CONDITION		REQUIRED ACTION		COMPLETION TIME
A.	One RHR loop inoperable.	A.1	Initiate action to restore RHR loop to OPERABLE status.	Immediately
B.	Both RHR loops inoperable. OR No RHR loop in operation.	B.1 AND	Suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet the SDM of LCO 3.1.1.	Immediately

* Beginning April 1, 2020, an alternate approved means of RHR may be provided until June 30, 2020. No increase in Mode changes will be permitted while utilizing the alternate approved means of RHR.

CONDITION	REQUIRED ACTION		COMPLETION TIME
	B.2	Initiate action to restore one RHR loop to OPERABLE status and operation.	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 RHR pump that is not in operation.	In accordance with the Surveillance Frequency Control Program
SR 3.4.8.3	Verify RHR loop locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program

3.9 REFUELING OPERATIONS

3.9.4 Residual Heat Removal (RHR) and Coolant Circulation - Water Level ≥ 23 Ft

LCO 3.9.4 One RHR loop shall be OPERABLE and in operation.*

- NOTE -

The required RHR loop may be removed from operation for ≤ 1 hour per 8 hour period, provided no operations are permitted that would cause introduction of coolant into the Reactor Coolant System (RCS) with boron concentration less than that required to meet the minimum required boron concentration of LCO 3.9.1.

APPLICABILITY: MODE 6 with the water level ≥ 23 ft above the top of reactor vessel flange.

ACTIONS

CONDITION		REQUIRED ACTION		COMPLETION TIME
A.	RHR loop requirements not met.	A.1	Suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet the boron concentration of LCO 3.9.1.	Immediately
		AND		
		A.2	Suspend loading irradiated fuel assemblies in the core.	Immediately
		AND		
		A.3	Initiate action to satisfy RHR loop requirements.	Immediately
		AND		

* Beginning April 1, 2020, an alternate approved means of RHR may be provided until June 30, 2020. No increase in Mode changes will be permitted while utilizing the alternate approved means of RHR.

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.4.1	Verify one RHR loop is in operation and circulating reactor coolant.	In accordance with the Surveillance Frequency Control Program
SR 3.9.4.2	Verify required RHR loop locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program

3.9 REFUELING OPERATIONS

3.9.5 Residual Heat Removal (RHR) and Coolant Circulation - Water Level < 23 Ft

LCO 3.9.5 Two RHR loops shall be OPERABLE, and one RHR loop shall be in operation. *

APPLICABILITY: MODE 6 with the water level < 23 ft above the top of reactor vessel flange.

ACTIONS

CONDITION		REQUIRED ACTION		COMPLETION TIME
A.	Less than the required number of RHR loops OPERABLE.	A.1	Initiate action to restore RHR loop(s) to OPERABLE status.	Immediately
		OR		
		A.2	Initiate action to establish ≥ 23 ft of water above the top of reactor vessel flange.	Immediately
B.	No RHR loop in operation.	B.1	Suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet the boron concentration of LCO 3.9.1.	Immediately
		AND		
		B.2	Initiate action to restore one RHR loop to operation.	Immediately
		AND		
		B.3	Close all containment penetrations providing direct access from containment to outside atmosphere.	4 hours

* Beginning April 1, 2020, an alternate approved means of RHR may be provided until June 30, 2020. No increase in Mode changes will be permitted while utilizing the alternate approved means of RHR.

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.9.5.1	Verify one RHR loop is in operation and circulating reactor coolant.	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	Verify RHR loop locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program