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10 CFR 50.90

March 20, 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

2. Letter from S. Rafferty-Czincila (Exelon Generation Company, LLC) to U.S. Nuclear Regulatory Commission, "Supplemental Information Associated with the License Amendment Request to Add a One-Time Note for Use of Alternate Residual Heat Removal Methods," dated March 5, 2020

3. Letter from D. Gudger (Exelon Generation Company, LLC) to U.S. Nuclear Regulatory Commission, "Supplemental Information Associated with the License Amendment Request to Add a One-Time Note for Use of Alternate Residual Heat Removal Methods," dated March 12, 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. 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.

Attachment 1 contains additional information based on questions provided during a U.S. Nuclear Regulatory Commission audit on March 17 and 18, 2020. These issues have been discussed with the audit team. Attachment 2 contains a revised markup of Technical Specifications 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 20th day of March 2020.

Respectfully,

David T. Gudger
Senior Manager - Licensing
Exelon Generation Company, LLC

Attachments: 1) Response to Audit Questions
2) 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
Response to Audit Questions

Question:

1) Information about the basis for the 10% opening of MOV-700, and operation of normal RHR with MOV-700 stuck partially open.

Response:

With MOV 700 at least 10 percent open it has been determined that there is adequate RHR pump flow to cooldown the RCS using the normal shutdown cooling flow path. Two RHR pumps would be capable of operating at a combined flow of greater than 2,500 gpm, and a single RHR pump operating alone can exceed 2,000 gpm while the RCS is pressurized above 100 psig. Prior to venting the RCS, a single RHR pump would be left running and the RHR flow would be required to be throttled lower using valves 624 and 625 on the discharge of the RHR heat exchangers. It is normal to run two RHR pumps while the RCS is pressurized and then use only one RHR pump during RCS vented conditions. This is done to maximize NPSH margin and limit the potential for flashing on the suction of the RHR pumps. Only one pump is required to remove RCP heat and decay heat. The heat removal for the throttled flow rate would be equal to approximately 200 hours post shutdown, which would allow depressurization and drain down to RCS flange level in less time than it would take to implement the alternative RHR method. If the valve were to stick at a position less than 10% open, then NPSH could be lost and flashing could occur on the suction of the RHR pump. Since 700 could not be relied upon as an isolation boundary with the valve partially open, the Alternate RHR Cooling #1 could not be implemented. In the unlikely event that 700 sticks partially open, but less than 10% open, the Alternate RHR Cooling #2 mode from Figure 3 in the LAR would need to be implemented.

Question:

2) Information about the updated design (3 inch pipes in parallel) of the alternate RHR cooling, including verification that flow can be established and maintained, and pressure transients for alternate RHR have been evaluated.
    a. What is the minimum required RHR flow in the Alternate RHR Cooling configuration?
    b. Are two RHR pumps required to obtain the minimum RHR flow?

Response:

The minimum required flow in the “Alternate RHR Cooling” configurations is 1,500 gpm. This is based on the flow rate used in the RELAP analysis that demonstrates that the RCS can be vented, depressurized and drained to 84-inches when at least 1,500 gpm of flow is provided through the deluge nozzles. The use of a single RHR pump at this flow rate is adequate to cooldown the RCS to refueling conditions. The updated design, that includes the use of 3-inch pipes run in parallel, was analyzed to determine the minimum number of runs required to meet at least 1,500 gpm from one operating RHR pump at all plant conditions prior to defueling the reactor in the upcoming outage at Ginna. The most limiting condition for flow is when the RCS is vented and drained to reactor vessel flange level (84” RCS level). Under these conditions a single operating RHR pump can recirculate an RCS flow rate of greater than 1,500 gpm without loss of NPSH or flashing in the suction piping with six 3-inch diameter lines installed in parallel. Prior to venting the RCS, two RHR pumps can be operated together to achieve a faster cooldown rate in accordance with existing procedural

guidance in the Ginna cooldown procedure O-2.2, if desired. The combined flow rate from two RHR pumps operating in parallel exceeds 2,800 gpm under these conditions.

The temporary alternate RHR piping is being designed to meet the RHR system design pressure of 660 psig. This pressure rating exceeds the peak pressure for shutdown transients caused by either mass addition or an unintentional heat addition. The Ginna analysis for these events determined that the peak pressure in the RHR system would be limited to less than 650 psig on the discharge of the RHR pumps. The temporary piping will be located on the suction of the RHR pumps. The portion of the modification that would be left permanently installed, the 10-inch tees between the MOVs 700/701 and 720/721, are designed to meet the design pressure of that section of piping of 2485 psig.

Question:

3) Provide a detailed sequence of events or timeline of how the alternate cooling systems will be placed in service

Response:

The plant is cooled down from hot zero power with an average RCS temperature of 547°F using the condenser steam dump valves and atmospheric relief valves (ARVs). Auxiliary feedwater supplies water to the SGs for this cooldown, and an RCP will remain in operation during this time. This will be no different during the upcoming RFO than a normal cooldown.

Once the temperature in the RCS is between 330°F and 350°F the LTOP system is placed in-service, and the normal shutdown cooling RHR system will be attempted to be placed in-service. This includes attempting to open MOV-700.

If MOV-700 cannot be opened at this time (including use of contingency methods), then preparations for installation of the alternate RHR cooling configurations will be enacted. This will include moving materials into containment and setting up rigging scaffolds for being able to cut into the piping to install the tees. Once the piping is adequately cooled the water will be drained from between 700 and 701 and between 720 and 721, and the modification will be installed.

While installation is occurring, the ARVs and AFW will be used to continue cooling the RCS. An RCP will continue to operate during this time.

Once installation is complete, filling and venting will occur. The plan for filling and venting has not been finalized, yet; however, the modification will require that the piping be at a slope from low to high. The piping will be fit-up without permanent connections to verify proper slope. There are existing high point vents between 700 and 701 and between 720 and 721. These will allow for a fill and vent from the low point to the high point. Vents will be added as necessary if local high points are identified after permanent connections are made. UT checks will be used to verify the piping is sufficiently full.

Once the system has been readied, the alternate shutdown cooling system will be placed in-service. The expected RCS temperature that this will occur will be between 250°F and 280°F based on the estimated time for installation.

The system will be placed in-service similar to the existing system except that 720 and 700 will be left closed, and the valves 852A and 852B will be opened to allow for discharge into the upper plenum of the reactor vessel. An RCP will remain in operation as the system is placed in-service.

Once the alternate RHR system is shown to be operating correctly cooldown will continue into Mode 5 (<200°F). The RCP will remain in operation into Mode 5 such that the Mode 4 Technical Specification 3.4.6 is met with two operable RCS loops and one RCP in operation.

There will be no differences from a normal cooldown and depressurization of the RCS once the alternate RHR system is in-service. At the time when drain down is accomplished in the RCS, there will be different flow limits on the RHR system than the existing drain down procedure. Currently if the RCS is drained to between 100 to 70 inches RHR flow is limited to 3000 gpm, and if less than 70 inches to 30 inches RHR flow is limited to less than or equal to 1400 gpm. During the upcoming RFO, the plan is to drain the RCS to 84 inches (the reactor vessel flange). This level allows for head removal and entering Mode 6 when the cavity can be flooded. While the alternate RHR system is in-service the RCS will not be drained beyond what is required to remove the reactor vessel head and will not enter into Reduced Inventory, which is defined as less than 64 inches, or into mid-loop conditions. If the alternate RHR system is in-service, then the RHR flow will be limited to between 1500 gpm and 1600 gpm as the RCS is drained to 84 inches.

Question:

4) Provide a bases for the Technical Specification changes as provided.

Response:

Attached are revised markups of proposed Technical Specifications pages. As stated in the original License Amendment Request, due to concerns over the opening of the Motor Operated Valve (MOV) 700 associated with the operation of the Residual Heat Removal (RHR) system, this one-time change is being requested to provide an alternate form of plant cooldown which may be used during the shutdown of the reactor during the upcoming refueling outage scheduled for April 2020.

LCO 3.4.7 (“RCS Loops-Mode 5, Loops Filled”), LCO 3.4.8 (“RCS Loops – MODE 5, Loops Not Filled”), LCO 3.9.4 ("Residual Heat Removal (RHR) and Coolant Circulation - Water Level ≥ 23 Ft"), and LCO 3.9.5 ("Residual Heat Removal (RHR) and Coolant Circulation - Water Level < 23 Ft") have been modified by asterisks to ensure that an alternate RHR loop will allow these actions to be met.

The attached pages have been modified to add a note that:

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

This note ensures that the alternate means of RHR, as approved in the Amendment, will be used until June 30, 2020, and that no increase in Mode changes will be permitted while utilizing the alternate approved means of RHR.

No Bases changes are associated with this one-time change. Justification for these changes has been supplied in the letters referenced in the cover letter. No Technical Specification Bases pages are being made as a result of this one-time change that expires on June 30, 2020. The basis for this change remains in compliance with 10 CFR 50.36. This supplement is also deleting pages that were previously supplied for information.

Attachment 2
Revised Markup of Proposed Technical Specifications Pages

TECHNICAL SPECIFICATIONS PAGES

3.4.7-1
3.4.8-1
3.9.4-1
3.9.5-1

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 means of RHR as approved in Amendment No. ____ may be used until June 30, 2020. No increase in Mode changes will be permitted while utilizing the alternate approved means of RHR.

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 means of RHR as approved in Amendment No. ____ may be used until June 30, 2020. No increase in Mode changes will be permitted while utilizing the alternate approved means of RHR.

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 means of RHR as approved in Amendment No. ____ may be used until June 30, 2020. No increase in Mode changes will be permitted while utilizing the alternate approved means of RHR.

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 means of RHR as approved in Amendment No. ____ may be used until June 30, 2020. No increase in Mode changes will be permitted while utilizing the alternate approved means of RHR.