

10 CFR 50.90

April 14, 2016

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:** Response to Request for Additional Information for the Review of TSTF-490,  
Deletion of E-Bar Definition and Revision to RCS Specific Activity Tech Spec

- References:**
1. Letter from James Barstow (Exelon) to U.S. Nuclear Regulatory Commission, "Application to Revise Technical Specifications to Adopt TSTF-490, 'Deletion of E Bar Definition and Revision to RCS Specific Activity Tech Spec'," dated February 4, 2016.
  2. Letter from Diane Render (U.S. Nuclear Regulatory Commission) to Bryan Hanson (Exelon), "R.E. Ginna Nuclear Power Plant - Request for Additional Information Regarding: Deletion of E Bar Definition and Revision to Reactor Coolant System Specific Activity Technical Specifications (CAC NO. MF7339)," dated March 17, 2016.

By letter dated February 4, 2016 (Reference 1), Exelon Generation Company, LLC (Exelon) submitted a License Amendment Request (LAR) for R.E. Ginna Nuclear Power Plant (Ginna). The proposed LAR would revise Ginna's Technical Specifications (TS) Limiting Condition for Operation 3.4.16.

The NRC staff reviewed the information provided that supports the LAR and identified the need for additional information in order to complete their evaluation. The final Request for Additional Information (RAI) was sent from the NRC to Exelon on March 17, 2016 (Reference 2). The response to the RAI is provided in the attachment to this letter.

There are no regulatory commitments in this letter.

In accordance with 10 CFR 50.91, "Notice for public comment; State consultation," paragraph (b), Exelon is notifying the State of New York of this RAI response by transmitting a copy of this letter and its attachments to the designated State Official.

Exelon has reviewed the information supporting a finding of no significant hazards consideration, and the environmental consideration, that were previously provided to the NRC in Attachment 1 of the Reference 1 letter. The additional 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, Exelon has concluded that the information provided in this 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.

If you have any questions or require additional information, please contact Laura A. Lynch at 610-765-5729.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 14<sup>th</sup> day of April 2016.

Respectfully,



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James Barstow  
Director - Licensing and Regulatory Affairs  
Exelon Generation Company, LLC

Attachment: Response to Request for Additional Information for the Review of TSTF-490,  
Deletion of E-Bar Definition and Revision to RCS Specific Activity Tech Spec

cc:	Regional Administrator - NRC Region I	w/ attachment
	NRC Senior Resident Inspector - Ginna	"
	NRC Project Manager, NRR - Ginna	"
	A. L. Peterson, NYSERDA	"

**ATTACHMENT**

**R.E. Ginna Nuclear Power Plant**

**Renewed Facility Operating License Nos. DPR-18**

**NRC Docket No. 50-244**

**Response to Request for Additional Information for the Review of TSTF-490,  
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By letter dated February 4, 2016 (Reference 1), Exelon Generation Company, LLC (Exelon) submitted a License Amendment Request (LAR) for R.E. Ginna Nuclear Power Plant (Ginna). The proposed LAR would revise Ginna's Technical Specifications (TS) Limiting Condition for Operation (LCO) 3.4.16.

The NRC staff reviewed the information provided and determined that additional information was needed to complete their review (Reference 2). The following question was provided.

**ARCB-RAI-1:**

The proposed change deletes Condition C of TS 3.4.16 requiring gross specific activity of the coolant less than or equal to  $100/\bar{E}$   $\mu\text{Ci/gm}$  and proposes to replace it with Dose Equivalent Xenon-133 (DEX) not within limits. In the current TS 3.4.16, when the gross specific activity of the coolant is greater than  $100/\bar{E}$   $\mu\text{Ci/gm}$ , the required action is to take immediate action to begin shutdown of the reactor (be in mode 3 with  $T_{\text{avg}}$  less than 500 °F) within 8 hours [emphasis added]. Ginna proposes 48 hours [emphasis added] to restore DEX within limits. Technical Specification Task Force (TSTF)-490, Revision 0 provided the following justification for this change:

The Completion Time for revised TS 3.4.16 Required Action B.1 will require restoration of Dose Equivalent Xe-133 to within limit in 48 hours. This is consistent with the Completion Time for current Required Action A.2 for Dose Equivalent I-131. The Completion Time of 48 hours for revised Required Action B.1 is acceptable since it is expected that, if there were a noble gas spike, the normal coolant noble gas concentration would be restored within this time period. Also, there is a low probability of an accident occurring during this time period.

For the following reasons the NRC staff needs additional justification for the proposed change:

While it is a correct statement that the proposed change makes the Completion Times of TS 3.4.16 Required Action A.2 and B.1 in NUREG-1431, "Standard Technical Specifications [STS] Westinghouse Plants," consistent, it is not clear to the NRC staff why the Completion Times should be consistent. The plant Conditions for these Required Actions are different. Ginna's TS 3.4.16 Required Action A.2 is required when the plant is in a condition analyzed in the design basis accident analyses (reactor coolant dose equivalent I-131 is between 1 and 60  $\mu\text{Ci/gm}$ ). The new proposed TS 3.4.16 Required Action B.1 is required when the plant is in a condition not analyzed [emphasis added] in the design basis accident analyses (DEX is greater than 650  $\mu\text{Ci/gm}$ ). Typically, the Required Action for a condition not analyzed requires the plant to take immediate actions to begin shutdown of the plant. The proposed change does not take immediate actions to begin shutdown of the plant, but allows 48 hours before the plant is required to begin shutting down.

Therefore, please provide additional justification for the proposed change to increase the Completion Time of TS 3.4.16 Required Action B.1 to 48 hours and why it is acceptable to be in an unanalyzed condition for 48 hours.

**Response:**

The Reactor Coolant System (RCS) activity is an initial condition for the plant radiological safety analyses and is governed by TS 3.4.16. More specifically, the plant RCS activity is limited to 60  $\mu\text{Ci/gm}$  Dose Equivalent I-131 (DEI) and, in accordance with the proposed amendment, 650  $\mu\text{Ci/gm}$  Dose Equivalent Xe-133 (DEX). These limits match the analyzed values in the Main Steam Line Break (MSLB), Steam Generator Tube Rupture (SGTR), Locked Rotor (LRA) and Rod Eject (REA) accidents.

The acceptable duration of plant operation in excess of these limits can be determined based on risk. Risk is proportional to the product of the consequences and probability, and probability is directly proportional to the duration. Therefore, risk is evaluated in this justification by using the product of consequence (i.e., dose) and time (i.e., TS Completion Time) as a figure of merit to justify the increase in the duration of the operation with DEX not within limits from 8 hours to 48 hours.

The Ginna Alternative Source Term (AST) design basis analyses identify four Design Basis Accident (DBA) analyses that assume a source term that includes the reactor coolant as identified previously. The LRA and REA accidents include assumptions that the fuel rods fail during the accident. A review of the source term in the LRA and REA accident analyses reveals that the coolant activity contribution to the total dose equivalent source term is insignificant. As a result of this low sensitivity to the coolant source term, the increase from 8 hours to 48 hours will not significantly change the risk for these events and they are not considered further.

In the other MSLB and SGTR accidents, the source term is derived only from the coolant activity. In the Ginna AST analyses, the Iodine is typically analyzed at 60  $\mu\text{Ci/gm}$ , except for the accident initiated Iodine spike (in Regulatory Guide (RG) 1.183 terminology, the Coincident Iodine Spike (CIS)) scenario that exceeds 60  $\mu\text{Ci/gm}$  in the SGTR and MSLB. The 60  $\mu\text{Ci/gm}$  limit is the pre-accident Iodine spike (in RG 1.183 terminology, the Pre-Incident Spike (PIS)). Since the PIS is directly related to and limited by the TS 3.4.16, the associated risk with this condition is the focus of this justification for a 48 hour completion time being acceptable.

The proportion of total dose at the Exclusion Area Boundary (EAB), Low Population Zone (LPZ) and Control Room (CR) for the MSLB and SGTR PIS is provided in the table below.

Source	EAB (fraction of total dose by source)		LPZ (fraction of total dose by source)		CR (fraction of total dose by source)	
	MSLB	SGTR	MSLB	SGTR	MSLB	SGTR
Iodine	98%	90%	98%	91%	99%	97%
Noble Gas	2%	10%	2%	9%	1%	3%
Total	100%	100%	100%	100%	100%	100%

The MSLB and SGTR PIS indicate that the dose contribution of the noble gas (i.e., DEX) is no more than approximately 10% of the total dose. This observation clearly indicates that the risk associated with exceeding TS 3.4.16 DEX is not the same as the risk associated with exceeding the DEI. Because of the dose sensitivity, exceeding the DEI coolant activity limit carries about nine times more risk than exceeding the DEX coolant activity limit. Therefore, it is reasonable and justifiable that the time duration associated with exceeding the DEX be up to approximately

nine times longer than the time duration associated with exceeding the DEI. In the case of the proposed amendment, Ginna is proposing a completion time of 48 hours to restore DEX to within limit. Per Action A.2 of TS 3.4.16, Ginna can operate with DEI up to 60  $\mu\text{Ci/gm}$  and must restore DEI to within limits in 7 days. The 48 hour completion time to restore DEX to within limits falls well within the 7 day completion time for DEI.

The above response clearly demonstrates that operation above the proposed DEX limit does not result in increased risk to individuals located in the control room and offsite. This is due to the fact that coolant noble gas activity contributes to a small fraction of the dose consequences resulting from design basis accidents. This is consistent with the approved NRC Safety Evaluation (Reference 3), which states, "The radiological consequences for the SGTR and the MSLB accidents demonstrate that the calculated thyroid doses are generally a greater percentage of the applicable acceptance criteria than the calculated whole body doses. It then follows that the Completion Time for noble gas activity being out of specification in the revised Required Action B.1 should be at least as great as the Completion Time for iodine specific activity being out of specification in current Required Action A.2. Therefore the Completion Time of 48 hours for revised Required Action B.1 is acceptable from a radiological dose perspective."

Given the above considerations, it is acceptable to be in a condition when the DEX exceeds 650  $\mu\text{Ci/gm}$  for up to 48 hours.

References:

1. Letter from James Barstow (Exelon) to U.S. Nuclear Regulatory Commission, "Application to Revise Technical Specifications to Adopt TSTF-490, 'Deletion of E Bar Definition and Revision to RCS Specific Activity Tech Spec'," dated February 4, 2016.
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3. Federal Register Notice of Availability published on March 19, 2007, 72 FR 12838, "Notice of Availability of Model Application Concerning Technical Specification Improvement Regarding Deletion of E Bar Definition and Revision to Reactor Coolant System Specific Activity Technical Specification Using the Consolidated Line Item Improvement Process."