From: Green, Kimberly
Sent: Friday, January 31, 2020 7:19 AM
To: Steinman, Rebecca L:(Exelon Nuclear)
Cc: Venkataraman, Booma; Salgado, Nancy
Subject: Request for Additional Information for Quad Cities Request to Revise Technical Specifications to Increase the MSIV leakage rate (L-2019-LLA-0045)
Attachments: Final RAI 01-30-2020.docx

Dear Ms. Steinman,

By application dated March 5, 2019 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML19064B369), as supplemented by letters dated May 23, 2019 (ADAMS Accession No. ML19143A377), and July 22, 2019 (ADAMS Accession No. ML19203A176), Exelon Generation Company, LLC (Exelon) requested changes to the technical specifications for Quad Cities Nuclear Power Station, Units 1 and 2, to: increase the main steam isolation valve (MSIV) leakage rate limit for all four steam lines from 86 to 156 standard cubic feet per hour (scfh) for Unit 1 and from 86 to 218 scfh for Unit 2; credit the residual heat removal (RHR) drywell spray system and add a new technical specification (TS) 3.6.2.6, “Residual Heat Removal (RHR) Drywall Spray”; and adopt Technical Specification Task Force Traveler (TSTF) 551, “Revise Secondary Containment Surveillance Requirements.”

The U.S. Nuclear Regulatory Commission (NRC) staff is reviewing your submittal and has identified areas where additional information is needed to complete its review. Attached, please find a draft request for additional information (RAI).

A draft RAI was previously transmitted to you by email dated December 20, 2019. At your request, the NRC held a clarification call with Exelon on January 16, 2020, to clarify the NRC staff’s request. As a result of that call, an edit was made to ARCB-RAI-3 to change “…the current aerosol settling velocity…” to “…the proposed aerosol settling velocity…”

A response to the attached RAI is requested within 60 days from the date of this email.

If you have any questions, please let me or Ms. Booma Venkataraman know.

Regards,
Kim Green
(301) 415-1627
kimberly.green@nrc.gov

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REQUEST FOR ADDITIONAL INFORMATION

EXELON GENERATION COMPANY, LLC

QUAD CITIES NUCLEAR POWER STATION, UNITS 1 AND 2

DOCKET NOS. 50-254 AND 50-265

CHANGES TO TECHNICAL SPECIFICATIONS TO INCREASE ALLOWABLE MAIN STEAM ISOLATION VALVE LEAKAGE RATES AND REVISE SECONDARY CONTAINMENT SURVEILLANCE

ARCB RAIs

Background:

In its letter dated March 5, 2019 (Agency wide Documents Access and Management System (ADAMS) Accession No. ML19064B369), as supplemented by letters dated May 23, 2019 (ADAMS Accession No. ML19143A377), and July 22, 2019 (ADAMS Accession No. ML19203A176), Exelon Generation Company, LLC (Exelon, the licensee) submitted a license amendment request (LAR) for the Quad Cities Nuclear Power Station, Units 1 and 2 (QCNPS). The proposed amendment would increase the main steam isolation valve (MSIV) leakage rate limit for all four steam lines from 86 to 156 standard cubic feet per hour (scfh) for Unit 1 and from 86 to 218 scfh for Unit 2; credit the residual heat removal (RHR) drywell spray system and add a new technical specification (TS) 3.6.2.6, "Residual Heat Removal (RHR) Drywall Spray"; and adopt Technical Specification Task Force Traveler (TSTF) 551, "Revise Secondary Containment Surveillance Requirements."

The proposed changes in the LAR are based, in part, on a revised radiological consequence dose analysis of the design basis loss-of-coolant accident (LOCA) previously approved by the NRC in License Amendment Nos. 233 and 229, "Dresden Nuclear Power Station, Units 2 and 3, and Quad Cities Nuclear Power Station, Units 1 and 2 - Issuance of Amendments Re: Adoption of Alternate Source Term Methodology (TAC Nos. MB6530, MB6531, MB6532, MB6533, MC8275, MC8276, MC8277 and MC8278)," dated September 11, 2006 (ADAMS Accession No. ML062070290), to adopt full implementation of the Alternative Source Term (AST) methodology.

Exelon stated in the LAR that the revised LOCA radiological analysis is performed using the AST methodology, established as the licensing basis for this accident, and NRC regulatory requirements in Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.67, "Accident source term," and 10 CFR Part 50, Appendix A, General Design Criteria (GDC), Criterion 19, "Control room"; guidance in Regulatory Guide (RG) 1.183, "Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors," Revision 0, dated July 2000 (ADAMS Accession No. ML003716792); guidance in Standard Review Plan (SRP) 6.5.2, "Containment Spray as a Fission Product Cleanup System," dated March 2007 (ADAMS Accession No. ML070190178); and guidance in SRP Section 15.0.1, "Radiological

Consequence Analyses Using Alternative Source Terms," dated July 2000 (ADAMS Accession No. ML003734190).

Exelon's revised LOCA radiological analysis (QDC-0000-N-1481, Revision 3), contained in Enclosure B of the LAR (ADAMS Accession No. ML19064B371), proposes to modify several assumptions and inputs used to model the MSIV leakage pathway after a design basis LOCA. The LAR states that the proposed credited deposition in the main steam piping is based on AEB 98-03, "Assessment of the Radiological Consequences for the Perry Pilot Plant Application Using the Revised (NUREG-1465) Source Term," dated December 1998 (ADAMS Accession No. ML011230531).

As stated in NRC Regulatory Issue Summary (RIS) 2006-04, "Experience with Implementation of Alternative Source Terms," dated March 7, 2006 (ADAMS Accession No. ML053460347), any licensee who chooses to reference these AEB 98-03 assumptions should provide an appropriate justification that the assumptions are applicable to their particular design.

In the NRC staff's safety evaluation (SE) dated September 11, 2006, to approve Exelon's full implementation of the AST methodology, the NRC staff indicated that it had concerns regarding the use of AEB 98-03. At that time, the NRC staff based its approval of the LAR, in part, upon additional conservatism in the MSIV leakage model. Specifically, the SE stated:

> The NRC staff expressed a concern that the removal through aerosol settling was overestimated by modeling two settling volumes with the same settling velocity in each, when the settling would be expected to be at a lesser rate for the later sections of piping and at a later time considering that the larger and heavier aerosols would have already settled out of the main steam line atmosphere in upstream sections of piping. However, as stated above, Exelon did not credit any reduction in drywell pressure or the MSIV leakage rate after 24 hours. Leakage rates were assumed to be held constant for the entire duration of the accident for conservatism. Given this information, the NRC staff finds the Dresden and Quad Cities main steam line aerosol settling model to be reasonably conservative.
>
> The NRC staff acknowledges that aerosol settling is expected to occur in the main steam line piping but because of recent concerns with aerosol sampling and its characteristics used in AEB-98-03 and lack of further information, the NRC staff is concerned with how much deposition (i.e., what settling velocity value) is appropriate. The licensee has used a model based on the methodology of AEB-98-03, but has applied additional conservatism (i.e. 40th percentile settling velocity, constant MSIV leakage for the entire duration of the accident) to address the NRC staff's concern about the applicability of the AEB-98-03 methodology to Dresden and Quad Cities. The NRC staff further acknowledges that the estimate of the fraction of the aerosol that leaks to the environment is uncertain because of phenomenological uncertainties concerning the environment the aerosol encounters in the various volumes assumed by Exelon.

Section 50.67 of 10 CFR requires, in part, that: (i) An individual located at any point on the boundary of the exclusion area for any 2-hour period following the onset of the postulated fission product release, would not receive a radiation dose in excess of 25 rem total effective dose equivalent (TEDE), (ii) An individual located at any point on the outer boundary of the low population zone, who is exposed to the radioactive cloud resulting from the postulated fission product release (during the entire period of its passage), would not receive a radiation dose in excess of 25 rem TEDE, and (iii) Adequate radiation protection is provided to permit access to and occupancy of the control room under accident conditions without personnel receiving radiation exposures in excess of 5 rem TEDE for the duration of the accident.

Appendix A to 10 CFR Part 50, GDC 19, requires, in part, that the control room be maintained in a safe, habitable condition under accident conditions by providing adequate protection from a dose that would not exceed 5 rem TEDE for the duration of the accident.

In order to complete its review of the LAR, the NRC staff requires additional information on the proposed modeling of credit for reduction of airborne radioactivity from containment sprays and assumptions regarding reduction of radioactivity in the MSIV leakage pathway presented. Resolution of these concerns is needed to complete a technical review and to determine whether the NRC regulatory requirements in 10 CFR 50.67 and 10 CFR Part 50, Appendix A, GDC 19 are met. Therefore, the NRC staff requests the following additional information.

Regulatory Basis and Background for ARCB-RAI-1A, B & C – Spray Credit in the LOCA Model:

RG 1.183, Appendix A, Section 3.3 states, in part, that, "Reduction in airborne radioactivity in the containment by containment spray systems that have been designed and are maintained in accordance with Chapter 6.5.2 of the SRP (Ref. A-1) may be credited." Section 3.3 also states, in part, that, "The evaluation of the containment sprays should address areas within the primary containment that are not covered by the spray drops… The containment building atmosphere may be considered a single, well-mixed volume if the spray covers at least 90% of the volume and if adequate mixing of unsprayed compartments can be shown."

Enclosure B, "QDC-0000-N-1481, Revision 3, Quad Cities Units 1 & 2 Post-LOCA EAB, LPZ, and CR Dose – AST Analysis," Section 2.1.3, "Reduction In Airborne Activity Inside Containment," page 13 of the LAR, acknowledges that the drop size spectrum emitted by the spray nozzles is a key parameter in determining the fission product removal effectiveness and states that detailed drop size information for the spray nozzles could not be located. Section 5.3.2.12, "Drywell Spray Parameters," of the LAR provides a spray pump volumetric flow rate of 2,352 gallons per minute (gpm). Sprays would be initiated by manual action 10 minutes post-accident with an assumed termination at 4 hours and a fall height of 11.41 meters (m) (37.43 feet).

The NRC staff examined the QCNPS Updated Final Safety Analysis Report (UFSAR), Section 6.2.2, "Containment Heat Removal Systems," for evidence that the containment spray systems have been designed to provide a reduction in airborne activity consistent with SRP Section 6.5.2. Based on this examination, it appears that the spray systems were designed for pressure reduction and not specially for reducing airborne radioactivity. The NRC staff notes that containment spray design requirements regarding the ability to reduce airborne radioactivity are discussed in Enclosure B, Section 2.1.3, "Reduction in Airborne Activity Inside Containment," in a comparison between SRP Section 6.5.2 review items.

The NRC staff examined the calculation of the particulate removal coefficient as documented in Enclosure B, Section 7.11, "Spray Calculations," page 64 of the LAR. Based on this examination, it appears that the spray drop fall height of 11.41 m (37.43 feet) was determined by the difference in elevations between the lower drywell spray header and the bottom of the drywell floor. This method does not appear to consider the obstructions that are present in the drywell, which could reduce the effective spray drop fall height. In addition, the analysis assumes a spray flow rate of 2,352 gpm. As with spray drop fall height, obstructions in the drywell could reduce the effective spray flow rate available for reducing airborne radioactivity. The NRC staff notes that both the unobstructed free fall height and spray flow rate are important factors in determining the ability of the containment sprays to effectively reduce airborne radioactivity. This issue related to reductions in spray fall height and spray flow rate resulting from impingement has been addressed in previous AST applications.

NUREG/CR-5966, "A Simplified Model of Aerosol Removal by Containment Sprays," Section H, (ADAMS Accession No. ML063480542) discusses the issue of obstructions interfering with the effectiveness of sprays as follows:

> H. Droplet-Structure Interactions
>
> Reactor containment buildings are not simple, open volumes. Immediately below spray headers there is often a substantial open space. But, eventually, falling drops begin to encounter equipment, structures and operating floor of the reactor. The drywells of Mark I containments are well-known for the congestion that can interfere in the free fall of water droplets.
>
> The flooring in many reactor containments is grating or so-called "expanded sheet metal." Below the flooring are large volumes which, in a severe reactor accident, would hold aerosol-contaminated gas. It is of interest to know, then, if spray droplets, after hitting structures and the open flooring, would continue to sweep aerosols from the containment atmosphere. Certainly, in the case of the design basis analysis of iodine removal from containment atmospheres, it has been traditional to assume droplets are ineffective once they have hit a structure or the flooring.

<u>ARCB-RAI-1A</u>

Please describe how the design characteristics of the drywell spray system that effect its ability to provide a reduction in airborne activity, as discussed in Enclosure B, Section 2.1.3 of the LAR, will be incorporated into the QCNPS UFSAR.

<u>ARCB-RAI-1B</u>

Please provide additional information to justify the use of the fall height of 11.41 m (37.43 feet) in the determination of the particulate removal coefficient, including an explanation of how obstructions present in the drywell were considered.

<u>ARCB-RAI-1C</u>

Please provide additional information to justify use of the full spray flow rate of 2,352 gpm in the determination of the particulate removal coefficient, including an explanation of how obstructions present in the drywell were considered.

Regulatory Basis and Background for ARCB-RAI-2 – Crediting Iodine Removal in Previously Not Credited Steam Line Piping:

RG 1.183, Appendix A, Section 6.3 states, in part, that the "Reduction of the amount of released radioactivity by deposition and plateout on steam system piping upstream of the outboard MSIVs may be credited, but the amount of reduction in concentration allowed will be evaluated on an individual case basis."

Attachment 1, Table 3-1, "Summary of LOCA Analysis Revisions," of the LAR presents changes to the current licensing basis (CLB) for the revised LOCA radiological analysis. One of the proposed changes involves a change to the elemental iodine removal credited in the main steam lines (MSLs). The CLB credits elemental iodine removal in the two intact steam lines but not in the line with the failed MSIV. The LAR proposes to substantially increase the elemental iodine removal in the MSLs between the reactor pressure vessel (RPV) and the outboard MSIV by crediting elemental removal in the line with the assumed failed MSIV and by increasing the removal in the previously credited volumes from 50 percent to up to about 98 percent.

From the NRC staff's examination of Enclosure B and Section 7.3, "Main Steam Line Volumes & Surface Area for Plateout of Activity," page 54 of the LAR, some discrepancies in the tabulated data and parameter values applied as parameters in the revised LOCA radiological analysis were observed:

- Table 1B, "Rate Constant (λ_s) for Aerosol Settling In Main Steam Piping," page 77. The 40^{th} percentile settling velocity given as "0.0081 m/s" should be "0.00081 m/s."

- Table 20, "MSIV Failed & Intact Steam Line Volumes for Elemental Iodine Removal Efficiency Calculation," page 95. The calculated volume for "D" (Volume V_4) given as "4.33 m^3" should be "4.64 m^3." The calculated volume of "E" (Volume V_5) of "4.33 m^3" should be "1.39 m^3."

- Table 26, "Elemental Iodine Deposition Rate - Intact Steam Line Volume V_4," page 98. The Main Steam Line Total Surface Area given as "10.07 m^2" should be "12.35 m^2." As a result, the Elemental Iodine Removal Rates (hr^{-1}) and Elemental Iodine Deposition Efficiencies for all listed post-LOCA times in Table 26 are impacted.

- Table 31, "Net Elemental Iodine Removal Efficiency - Intact Steam Line Volume V_4," page 101. As a result of Table 26 observed discrepancies, the Elemental Iodine Deposition Efficiencies, Elemental Iodine Resuspension Efficiencies, and Elemental Net Deposition Efficiencies (%) for all listed post-LOCA times in Table 31 are impacted.

- As a result of the Table 31 observed discrepancies, the RADTRAD model input parameter values for elemental iodine are impacted.

ARCB-RAI-2

Please address the observed discrepancies described above and evaluate their impact on the calculated control room and offsite doses in the revised LOCA radiological analysis.

Regulatory Basis and Background for ARCB-RAI-3 – Aerosol Removal in Steam Lines with Sprays Credited:

RG 1.183, Appendix A, Section 6.3 states, in part, that the “Reduction in the amount of radioactivity upstream of the outboard MSIVs may be credited, but the amount of reduction is evaluated on an individual case basis.” Section 6.5 states, in part, that the “Reduction in the MSIV releases due to deposition in the main steam piping downstream of the MSIVs may be credited if the components and piping systems used are capable of performing their safety function during and following a safe shutdown earthquake and that the amount allowed will be evaluated on an individual case basis.”

SRP Section 15.0.1 states, in part, that “Independent calculations should be performed as necessary to conclude, with reasonable assurance, that the applicant’s analyses are acceptable.”

Attachment 1, “Evaluation of Proposed Changes,” page 16 of the LAR states, in part:

> The approved main steam line aerosol removal model does not include deposition by thermophoresis, diffusiophoresis, or flow irregularities.
>
> Therefore, it is reasonable to consider the use of aerosol removal by sprays and aerosol removal in the main steam lines as independent removal mechanisms because they rely on different physical mechanisms except for diffusiophoresis. However, neither the containment spray model nor the aerosol removal in main steam lines model consider removal by diffusiophoresis which confirms the modeling is conservative with respect to the experimental data.

Enclosure B, Section 5.8, “Changes Between Revision 2 and Revision 3,” page 43 of the LAR, states, in part, that the “Drywell spray meets the requirements in NUREG-0800 Section 6.5.2 as demonstrated in Section 2.1.3 and has been previously accepted for Nine Mile Point Units 1 and 2, Oyster Creek, and Hatch.”

The NRC staff notes that the AST applications cited above with credited drywell sprays were previously accepted on an individual case basis that included considerations on the particular design and under different conditions, such as credit applied for the condenser, lower MSIV leakage rates and decontamination factors, and a “penalty” applied for sedimentation (aerosol settling) to account for the recognition that the sprays preferentially remove large particles in primary containment. For example, in the Nine Mile Point 2 (NMP2) AST application, an aerosol settling velocity of 0.000066 m/s (compared to an aerosol settling velocity of 0.00081 m/s proposed in the QCNPS LAR) was applied to reflect the spray removal credited in the NMP2 containment, and to address the NRC staff’s concerns regarding the use of AEB 98-03. In its approval of the NMP2 application, the NRC staff found this value to be sufficiently conservative (along with other conservatisms) to reflect the effectiveness of the sprays.

NUREG/CR-5966 provides details on how sprays impact aerosols. This guidance document indicates that the sprays shift the sizes of aerosols in the containment towards those that are removed most slowly (the mean aerosol size decreases as the sprays operate). Estimates of aerosol deposition in the steam lines is determined using, in part, Equation 5 of AEB 98-03. Equation 5 provides the aerosol settling (and thus the aerosol deposition) in the steam line and indicates that the aerosol settling is proportional to the square of the diameter of the aerosols.

Because the sprays shift the size of the aerosols to smaller sizes, the aerosols settling in the steam lines would decrease due to these smaller diameter aerosols.

The LAR proposes to credit sprays to remove fission products following a design basis LOCA, but it does not appear to adjust the MSL aerosol deposition from the impact of the sprays in the revised LOCA radiological analysis. Enclosure B, Table 1B, "Rate Constant (λ_s) for Aerosol Settling in Main Steam Piping," page 77 of the LAR shows the same 40^{th} percentile aerosol settling velocity (0.00081 m/s) in all control volumes as used in the CLB with no credit for sprays. This is non-conservative when applying credit for sprays and considering the additional conservatism in the CLB, which would be removed through this LAR. The sprays change the aerosols on a time-dependent basis through each control volume that impacts its removal in the MSLs.

From the NRC staff's examination of the submitted information, it appears that the revised LOCA radiological analysis considers the aerosol removal by sprays and aerosol removal in the MSLs as independent removal mechanisms. The NRC staff notes that regardless of the specific removal mechanisms involved, larger aerosol particles in the containment atmosphere will be the preferentially removed, thereby making subsequent removal by deposition in downstream piping more challenging.

ARCB-RAI-3

Please provide justification as to why the proposed aerosol settling velocity and model to credit sprays in the QCNPS design is consistent with Reg 1.183, Revision 0. Please include sufficient technical detail to enable the NRC staff to perform an independent assessment on this aerosol settling velocity and model, and the subsequent calculated control room and offsite doses.

Regulatory Basis and Background for ARCB-RAI-4 – Transport of Radioactivity in the Drywell:

RG 1.183, Appendix A, Section 3.1 states, in part:

> The radioactivity released from the fuel should be assumed to mix instantaneously and homogeneously throughout the free air volume of the primary containment in PWRs or the drywell in BWRs as it is released. This distribution should be adjusted if there are internal compartments that have limited ventilation exchange. The suppression pool free air volume may be included provided there is a mechanism to ensure mixing between the drywell to the wetwell.

Section 3.3 states, in part, that the "Evaluation of the containment sprays should address areas within the primary containment that are not covered by the spray drops." Section 6.1 states, in part, that the "activity available for release via MSIV leakage should be assumed to be that activity determined to be in the drywell for evaluating containment leakage."

Enclosure B, Section 2.1.2, "Transport in Primary Containment," page 9 of the LAR states, in part, that "For calculating the MSIV leakage flow rates between the drywell and the environment, the flow rate analysis is based on the total drywell volume during the first 2 hours of the LOCA, and then the combined drywell plus suppression chamber air volume after 2 hours, at which time the containment volume is expected to become well mixed following the restoration of core cooling."

Section 7.2.3, “MSIV Leakage During 2-24 hrs,” page 51 of the LAR states, in part:

> Two hours after a LOCA, the drywell and suppression chamber volumes are expected to reach an equilibrium condition and the post-LOCA activity is expected to be homogeneously distributed between these volumes. The homogeneous mixing in the primary containment will decrease the activity concentration and therefore decrease the activity release rate through the MSIVs. To model the effect of this mixing, the MSIV flow rate used in the RADTRAD model is decreased by calculating a new leak rate based on the combined volumes of the drywell and suppression chamber.

Enclosure B, Section 2.1.2, “Transport in Primary Containment,” page 9 of the LAR references Table 2 of AEB 98-03, which shows the dependence of radiological consequences on containment mixing conditions for the Perry Nuclear Power Plant. However, the Perry Nuclear Power Plant has a Mark III containment, which is significantly different than the Mark I containment at QCNPS. These differences are not addressed in the proposed LAR.

The LAR proposes a significant change to the CLB transport modeling in primary containment by adding a compartment in the drywell to credit sprays and by crediting transport between the sprayed and unsprayed portions of the drywell. As a result, it is not clear that the assumption of equilibrium conditions at 2 hours exists between drywell and wetwell volumes. The proposed credit for sprays and the addition of the sprayed compartment decreases the activity in the drywell from the activity in the CLB and, therefore, will create a difference in the modelled activity in the sprayed drywell compartment as compared to the activity in the wetwell.

From the NRC staff’s examination of Enclosure B, Attachment 13.1 - RADTRAD Output File “QDC39CL02.o0,” starting on page 404 of the LAR, it appears that the I-131 activity concentrations for the sprayed and unsprayed portions of the drywell do not reach equilibrium conditions until after 5 hours beyond the time when RHR drywell sprays are assumed to terminate at 4 hours post-accident for aerosol removal.

ARCB-RAI-4

Please provide additional information to explain why the high flow rates necessary to create equilibrium conditions between the drywell and wetwell would exist for the time period from 2 hours in the QCNPS design.

EENB RAI

Regulatory Basis:

Section 50.49(e)(1) of 10 CFR requires that the time-dependent temperature and pressure at the location of the electric equipment important to safety must be established for the most severe design basis accident during and following which this equipment is required to remain functional.

Section 50.49(e)(2) of 10 CFR requires that humidity during design basis accidents must be considered.

Section 50.49(e)(4) of 10 CFR requires that the radiation environment must be based on the type of radiation, the total dose expected during normal operation over the installed life of the equipment, and the radiation environment associated with the most severe design basis accident during or following which the equipment is required to remain functional.

Section 50.49(b)(2) of 10 CFR requires qualification of nonsafety-related electric equipment whose failure under postulated environmental conditions could prevent satisfactory accomplishment of safety functions specified in subparagraphs (b)(1)(i)(A) through (C) of paragraph (b)(1) of 10 CFR 50.49 by the safety-related equipment.

Issue:

EGC stated that the environmental qualification (EQ) doses are not impacted due to the proposed change because the current EQ design basis does not include source term in the main steam lines downstream of the MSIVs. Additionally, EGC is crediting the drywell sprays to mitigate the consequences of a design basis accident. The drywell sprays are assumed to start 10 minutes following event initiation and continue for 4 hours. However, EGC did not provide an evaluation of the impact of the MSIV increased leakage rate on temperature, pressure, or humidity of electrical equipment.

It is also unclear as to whether EGC considered the impact of the proposed change on nonsafety-related equipment whose failure under postulated environmental conditions could prevent satisfactory accomplishment of safety functions by the safety-related equipment.

Request:

1. Provide an evaluation that shows that the temperatures, pressures, and humidity remain bounded by the existing environmental qualification for equipment and components impacted by the MSIV increased leakage rate.

2. Explain how you have assessed the impact of the proposed change on nonsafety-related equipment whose failure under postulated environmental conditions could prevent satisfactory accomplishment of safety functions by the safety-related equipment.

3. Confirm whether any components are being added to the EQ equipment list to comply with 10 CFR 50.49 due to the proposed changes. If components are being added, describe the equipment qualification for the environmental conditions to which the components are expected to be exposed.