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Exelon Nuclear

10 CFR 50.90

November 25, 2003

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

Limerick Generating Station, Units 1 and 2
Facility Operating License Nos. NPF-39 and NPF-85
NRC Docket Nos. 50-352 and 50-353

SUBJECT: License Amendment Request
Proposed Changes to the Reactor Coolant System Chemistry and Specific Activity Requirements

Pursuant to 10 CFR 50.90, "Application for amendment of license or construction permit," Exelon Generation Company, LLC (Exelon), hereby requests a change to the Technical Specifications (TS), Appendix A, of Facility Operating License Nos. NPF-39 and NPF-85 for Limerick Generating Station (LGS), Units 1 and 2, respectively.

The proposed changes involve: 1) relocating the requirements of TS Section 3/4.4.4, "Reactor Coolant System - Chemistry," in its entirety from the TS to the Technical Requirements Manual (TRM), i.e., a licensee document controlled in accordance with the requirements of 10 CFR 50.59, and 2) revising TS Section 3/4.4.5, "Specific Activity," to delete the specific activity requirements related to $\bar{E}$ (E-bar), gross beta and gross gamma. The proposed changes are consistent with NUREG-1433, "Standard Technical Specifications, General Electric Plants (BWR/4)," and changes previously approved by the NRC for other boiling water reactors.

Exelon has concluded that the proposed changes present no significant hazards consideration under the standards set forth in 10 CFR 50.92(c).

Exelon requests approval of the proposed amendments by November 25, 2004. Once approved, the amendments shall be implemented within 60 days of issuance. There are no commitments contained within this letter.

A001

The proposed changes have been reviewed by the Plant Operations Review Committee and approved by the Nuclear Safety Review Board.

If you have any questions or require additional information, please contact Glenn Stewart at 610-765-5529.

I declare under penalty of perjury that the foregoing is true and correct.

Respectfully,

Executed on 11-25-03

Michael P. Gallagher
Director, Licensing & Regulatory Affairs
Exelon Generation Company, LLC

Attachments:
1. Evaluation of the Proposed Changes
2. Technical Specifications and Bases Markup Pages
3. Technical Specifications and Bases Typed Pages

cc: Regional Administrator - NRC Region I w/ attachments
NRC Senior Resident Inspector - Limerick Generating Station "
NRC Project Manager, NRR - Limerick Generating Station "
Director, Bureau of Radiation Protection - Pennsylvania Department of Environmental Protection "

Attachment 1

License Amendment Request

Limerick Generating Station, Units 1 and 2

Docket Nos. 50-352 and 50-353

Proposed Changes to the Reactor Coolant System Chemistry and Specific Activity Requirements

EVALUATION OF PROPOSED CHANGES

ATTACHMENT 1

EVALUATION OF THE PROPOSED CHANGES

Subject: Proposed Changes to the Reactor Coolant System Chemistry and Specific Activity Requirements

Attachment 1

EVALUATION OF PROPOSED CHANGES

1.0 DESCRIPTION

In accordance with 10 CFR 50.90, "Application for amendment of license or construction permit," Exelon Generation Company, LLC (i.e., Exelon) requests changes to Technical Specifications (TS), Appendix A, of Facility Operating License Nos. NPF-39 and NPF-85 for Limerick Generating Station (LGS), Units 1 and 2, respectively.

The proposed changes involve: 1) relocating the requirements of TS Section 3/4.4.4, "Reactor Coolant System - Chemistry," in its entirety from the TS to the Technical Requirements Manual (TRM), i.e., a licensee document controlled in accordance with the requirements of 10 CFR 50.59, and 2) revising TS Section 3/4.4.5, "Specific Activity," to delete the specific activity requirements related to $\overline{E}$ (E-bar), gross beta and gross gamma. A complete description of the proposed changes is provided in Section 2.0, "Proposed Changes," of this Attachment. Attachment 2 provides the marked-up TS pages indicating the proposed changes. Attachment 3 provides the camera-ready TS pages.

The proposed changes are consistent with NUREG-1433, "Standard Technical Specifications, General Electric Plants (BWR/4)," and changes previously approved by the NRC for Vermont Yankee Nuclear Power Station, Amendment No. 190, dated July 18, 2000, Susquehanna Steam Electric Station, Units 1 and 2, Amendment Nos. 178 and 151, dated July 30, 1998, and Edwin I. Hatch Nuclear Plant, Units 1 and 2, Amendment Nos. 195 and 135, dated March 3, 1995.

2.0 PROPOSED CHANGES

LGS has separate TS for Unit 1 and Unit 2; however, the proposed changes are identical for both units.

Proposed changes for RCS chemistry requirements.

1. TS Index, Section 3/4.4.4, "Chemistry," is being deleted.

2. TS Limiting Condition for Operation (LCO) 3.4.4, "Chemistry," including TS Table 3.4.4-1, provides chemistry requirements for reactor coolant conductivity, chloride concentration, and pH for all operational modes. Associated TS Surveillance Requirement (SR) 4.4.4 controls the monitoring, sampling, and analysis of reactor coolant. This LCO and the associated Actions and Surveillance Requirements are being deleted and relocated to the TRM.

3. Associated TS Bases, Section 3 /4.4.4, "Chemistry," is being deleted and relocated to the TRM.

Proposed changes for RCS specific activity requirements.

1. TS Definition 1.10 provides the definition of E-bar, "Average Disintegration Energy." This definition is being deleted.

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EVALUATION OF PROPOSED CHANGES

2. TS LCO 3.4.5.b requires that the specific activity of the primary coolant be limited to less than or equal to 100/E-bar microcuries per gram. This LCO is being deleted.

3. TS Action 3.4.5.a.2 requires that the unit be in at least Hot Shutdown with the main steamline isolation valves closed within 12 hours if the specific activity of the primary coolant is greater than 100/E-bar microcuries per gram. This Action is being deleted.

4. TS Action 3.4.5.b requires performing sampling and isotopic analysis for iodine until the specific activity of the primary coolant is restored to within its limit if the specific activity is greater than 0.2 microcuries per gram Dose Equivalent I-131 or greater than 100/E-bar microcuries per gram. The phrase "or greater than 100/E-bar microcuries per gram" is being deleted from this Action.

5. TS Table 4.4.5-1, Item 1., requires sampling and analysis for determining gross beta and gamma activity at least once per 72 hours. This item is being deleted from the Table.

6. TS Table 4.4.5-1, Item 3., requires sampling and radiochemical analysis for determining E-bar at least once per six months. This item is being deleted from the Table. In addition, a footnote associated with Item 3 requires the sample to be taken after a minimum of 2 effective full power days (EFPD) and 20 days of power operation have elapsed since the reactor was last subcritical for 48 hours or longer. This footnote is also being deleted.

7. TS Table 4.4.5-1, Item 2., requires isotopic analysis for Dose Equivalent I-131 at least once per 31 days. The frequency for this analysis is being increased to once per 7 days.

3.0 BACKGROUND

RCS Chemistry

The water chemistry limits of the reactor coolant system are established to prevent damage to the reactor materials in contact with the coolant. Chloride limits are specified to prevent stress corrosion cracking of the stainless steel. The effect of chloride is not as great when the oxygen concentration in the coolant is low, thus a higher limit on chlorides is permitted during power operation. During shutdown and refueling operations, the temperature necessary for stress corrosion to occur is not present so high concentrations of chlorides are not considered harmful during these periods.

Conductivity measurements are required on a continuous basis since changes in this parameter are an indication of abnormal conditions. When the conductivity is within limits, the pH, chlorides and other impurities affecting conductivity will also be within their acceptable limits. If the conductivity meter is inoperable, additional samples are taken and analyzed to ensure that the chlorides are not exceeding the limits.

The surveillance requirements provide adequate assurance that concentrations in excess of the limits are detected in sufficient time to take corrective action.

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EVALUATION OF PROPOSED CHANGES

RCS Specific Activity

The limitations on the specific activity of the primary coolant ensure that the 2-hour thyroid and whole body doses resulting from a main steam line failure outside the containment during steady state operation will not exceed small fractions of the dose guidelines of 10 CFR Part 100. The values for the limits on specific activity represent interim limits based upon a parametric evaluation by the NRC of typical site locations. These values are conservative in that specific site parameters, such as site boundary location and meteorological conditions, were not considered in this evaluation.

Closing the main steam line isolation valves prevents the release of activity to the environs should a steam line rupture occur outside containment. The surveillance requirements provide adequate assurance that excessive specific activity levels in the reactor coolant will be detected in sufficient time to take corrective action.

4.0 TECHNICAL ANALYSIS

RCS Chemistry

The NRC's regulatory requirements related to the content of TS are set forth in 10 CFR 50.36. In promulgating this rule, NRC determined that the purpose of the TS is to impose only those conditions or limitations upon reactor operations necessary to obviate the possibility of an abnormal situation or event giving rise to an immediate threat to the public health and safety. TS that do not meet the screening criteria for retention as TS may be relocated to another licensee-controlled document. The four criteria defined in 10 CFR 50.36 are applied to the current TS for RCS chemistry parameters as follows:

Criterion 1: *Installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary.*

The RCS chemistry parameters of conductivity, chloride concentration and pH are not used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary. The current TS provide limits on particular chemical properties and surveillance requirements to monitor these properties to ensure that degradation of the reactor coolant pressure boundary is not exacerbated by poor chemistry. However, degradation of the reactor coolant pressure boundary is a long-term process. Other regulations and TS provide direct means to monitor and correct the degradation of the reactor coolant pressure boundary; for example, in-service inspection and primary coolant leakage limits.

Criterion 2: *A process variable, design feature, or operating restriction that is an initial condition of a design basis accident or transient analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.*

The RCS chemistry parameters of conductivity, chloride concentration and pH are not used as an initial condition of a design basis accident or transient analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.

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EVALUATION OF PROPOSED CHANGES

Criterion 3: *A structure, system, or component (SSC) that is part of the primary success path and which functions or actuates to mitigate a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.*

The RCS chemistry parameters of conductivity, chloride concentration and pH are not SSCs used as part of the primary success path and do not function or actuate to mitigate a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.

Criterion 4: *A structure, system, or component which operating experience or probabilistic risk assessment has shown to be significant to public health and safety.*

Operating experience or probabilistic safety assessments have not shown RCS chemistry parameters of conductivity, chloride concentration and pH to be significant to public health and safety.

The RCS chemistry requirements, including the limiting conditions for operation, surveillance requirements and bases, will be relocated to the TRM, which has been incorporated into the Updated Final Safety Analysis Report (UFSAR) by reference. Any future changes to these requirements will be controlled by the 10CFR50.59 process.

The relocation of these requirements from TS 3/4.4.4 to the TRM will continue to provide adequate assurance that conductivity limits, chloride concentrations, and pH limits will continue to be met, monitored and acted upon as appropriate.

In summary, the relocated requirements are not required to be in TS under 10CFR50.36, and are not required to obviate the possibility of an abnormal situation or event giving rise to an immediate threat to the public health and safety. Following relocation to the TRM, the provisions of 10CFR50.59 will provide adequate regulatory control over any future changes to these coolant chemistry requirements.

RCS Specific Activity

LGS TS LCO 3.4.5.b requirement to maintain specific activity less than or equal to 100/E-bar microcuries per gram, and the associated Surveillances for gross beta and gamma activity, as well as the radiochemical analysis for E-bar, i.e., TS Table 4.4.5-1, Items 1 and 3 (and the associated footnote), are being deleted. The LGS TS Section 3.4.5 Bases state that the intent of the requirement to limit the specific activity of the reactor coolant is to ensure that whole body and thyroid doses at the site boundary would not exceed a small fraction of the limits stated in 10 CFR Part 100 in the event of a main steam line failure outside containment. To ensure that offsite thyroid doses do not exceed a small fraction of the 10 CFR Part 100 limit of 300 Rem, reactor coolant Dose Equivalent I-131 is limited to less than or equal to 0.2 microcuries per gram. LGS TS Section 3.4.5 also limits reactor coolant gross specific activity to less than or equal to 100/E-bar microcuries per gram to ensure that whole body doses do not exceed a small fraction of the 10 CFR Part 100 limit of 25 Rem. In addition, LGS TS LCO 3.11.2.6 associated with radioactive effluents from the main condenser requires that the gross radioactivity rate of the noble gases Kr-85m, Kr-87, Kr-88, Xe-133, Xe-135, and Xe-138

measured at the recombiner after-condenser discharge be limited to less than or equal to 330 millicuries/second. The TS Bases for LGS TS LCO 3.11.2.6 state that restricting the gross radioactivity rate of noble gases from the main condenser provides reasonable assurance that the total body exposure to an individual at the exclusion area boundary will not exceed a small fraction of the limits of 10 CFR Part 100 in the event this effluent is inadvertently discharged directly to the environment without treatment.

BWR operating experience has demonstrated that the thyroid dose, i.e., Dose Equivalent I-131, is limiting and is more accurately determined. Therefore, any significant release to the coolant is adequately monitored by the Dose Equivalent I-131 requirement. Furthermore, prompt detection of fuel failure and iodine release is provided by radiation monitoring of the offgas stream. Radiation monitoring of the main condenser offgas, as required by LGS TS LCO 3.11.2.6, provides reasonable assurance that the reactor coolant gross specific activity is maintained at a sufficiently low level to preclude offsite doses from exceeding a small fraction of the limits of 10 CFR Part 100 in the event of a main steam line failure. Therefore, LGS TS LCO 3.4.5.b is redundant and the additional sampling and complex analysis required to demonstrate compliance with the 100/E-bar limit places an unnecessary burden on the licensee without a commensurate increase in safety. Elimination of LGS TS LCO 3.4.5.b and associated Surveillance Items 1 and 3 of TS Table 4.4.5-1 will allow plant personnel to focus attention on efficient, safe operation of the plant without the unnecessary distraction of the redundant Surveillance Requirements. Additional assurance that the offsite doses will not exceed a small fraction of the 10 CFR 100 limits is provided by increasing the frequency of sampling and analysis of the reactor coolant for Does Equivalent I-131 from at least once per 31 days to at least once per 7 days.

Since (1) the reactor coolant limit on Dose Equivalent I-131 adequately assures that offsite doses will not exceed small fractions of the limits of 10 CFR Part 100 in the event of a main steam line failure outside containment, and (2) gross radioactivity rate of the noble gases measured at the recombiner after-condenser discharge is limited by LGS TS LCO 3.11.2.6 to a value that provides reasonable assurance the reactor coolant gross specific activity is maintained at a sufficiently low level to preclude offsite doses from exceeding a small fraction of the limits of 10 CFR Part 100, the requirements associated with LGS TS LCO 3.4.5.b and Surveillance Items 1 and 3 of TS Table 4.4.5-1 are unnecessary.

The Actions and Surveillance Requirements associated with LCO 3.4.5.b are also being deleted, consistent with the LCO requirement deletion.

5.0 REGULATORY ANALYSIS

5.1 No Significant Hazards Consideration

Exelon has evaluated whether or not a significant hazards consideration is involved with the proposed amendments by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

1. **Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?**

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EVALUATION OF PROPOSED CHANGES

Response: No. The proposed relocation of the reactor coolant system chemistry requirements from Technical Specifications (TS) to the Technical Requirements Manual (TRM) is administrative in nature and does not involve the modification of any plant equipment or affect basic plant operation. Conductivity, chloride and pH limits are not assumed to be an initiator of any analyzed event, nor are these limits assumed in the mitigation of consequences of accidents.

The proposed elimination from TS of the reactor coolant system specific activity requirements involving E-bar, gross beta, and gross gamma does not involve the modification of any plant equipment or affect basic plant operation. Specific activity is not assumed to be an accident initiator, and the specific activity requirements remaining in TS provide reasonable assurance that the reactor coolant specific activity is maintained at a sufficiently low level to preclude offsite doses from exceeding a small fraction of the limits of 10 CFR Part 100 in the event of an accident.

Therefore, the proposed changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. **Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?**

Response: No. The proposed changes to relocate the reactor coolant system chemistry requirements from TS to the TRM, and to eliminate the reactor coolant system specific activity requirements involving E-bar, gross beta, and gross gamma, do not involve any physical alteration of plant equipment and do not change the method by which any safety-related system performs its function. As such, no new or different types of equipment will be installed, and the basic operation of installed equipment is unchanged. The methods governing plant operation and testing remain consistent with current safety analysis assumptions.

Therefore, the proposed changes do not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. **Does the proposed change involve a significant reduction in a margin of safety?**

Response: No. The proposed change to the reactor coolant system chemistry requirements involves the relocation of current TS requirements to the TRM based on regulatory guidance and previously approved changes for other stations. The proposed change is administrative in nature, does not negate any existing requirement, and does not adversely affect existing plant safety margins or the reliability of the equipment assumed to operate in the safety analysis. As such, there are no changes being made to safety analysis assumptions, safety limits or safety system settings that would adversely affect plant safety as a result of the proposed change. Margins of safety are unaffected by requirements that are retained, but relocated from the TS to the TRM.

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The proposed change also involves the elimination from TS of the reactor coolant system specific activity requirements involving E-bar, gross beta, and gross gamma. The specific activity requirements remaining in TS provide reasonable assurance that the reactor coolant specific activity is maintained at a sufficiently low level to preclude offsite doses from exceeding a small fraction of the limits of 10 CFR Part 100 in the event of an accident. As a result, the proposed change does not adversely affect existing plant safety margins.

Therefore, the proposed changes do not involve a significant reduction in a margin of safety.

Based on the above, Exelon concludes that the proposed amendment presents no significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and accordingly, a finding of "no significant hazards consideration" is justified.

5.2 Applicable Regulatory Requirements/Criteria

RCS Chemistry

The proposed changes delete the current Technical Specification (TS) requirements for reactor coolant system chemistry limits on conductivity, chlorides, and pH and relocate the requirements to the TRM, i.e., a licensee document controlled in accordance with the requirements of 10 CFR 50.59.

Section 182a of the Atomic Energy Act of 1954, as amended (the Act) requires applicants for nuclear power plant operating licenses to include the TS as part of the license. The Commission's regulatory requirements related to the content for the TS are set forth in 10 CFR 50.36. That regulation requires that the TS include items in eight specific categories. The categories are: (1) safety limits, limiting safety system settings, and limiting control settings; (2) limiting conditions for operation; (3) surveillance requirements; (4) design features; (5) administrative controls; (6) decommissioning; (7) initial notification; and (8) written reports. However, the regulation does not specify the particular requirements to be included in a plant's TS.

On July 22, 1993 (58 FR 39132), the NRC issued the "NRC Final Policy Statement on Technical Specifications Improvements for Nuclear Power Reactors" (Final Policy Statement) which provided guidance for evaluating the required scope of the TS, and defined the following four specific criteria to be used in determining which of the limiting conditions for operation should remain in TS:

(1) installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary;

(2) a process variable, design feature, or operating restriction that is an initial condition of a design-basis accident or transient analysis that either assumes the failure of, or presents a challenge to, the integrity of a fission product barrier;

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(3) a structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a design-basis accident or transient that either assumes the failure of, or presents a challenge to, the integrity of a fission product barrier; or

(4) a structure, system, or component which operating experience or probabilistic safety assessment has shown to be significant to public health and safety.

On July 19, 1995 (60 FR 36953), 10 CFR 50.36 was revised to incorporate these four specific TS content criteria into Section 36(c)(2)(ii) of 10 CFR Part 50. As indicated in the Statements of Consideration for the revised rule, the NRC recognized that the four criteria focus on the technical requirements for features of controlling importance to safety. However, since many of the requirements are of significance to the health and safety of the public, the revised rule reflects the subjective statement of the purpose of TS expressed by the Atomic Safety and Licensing Appeal Board in *Portland General Electric Company* (Trojan Nuclear Plant), ALAB-531, 9 NRC 263 (1979). There, the Appeal Board stated:

> "...technical specifications are to be reserved for those ... conditions or limitations upon reactor operation ... necessary to obviate the possibility of an abnormal situation or event giving rise to an immediate threat to the public health and safety."

Both the Final Policy Statement and the Statements of Consideration for the revised 10 CFR 50.36 rule indicate that TS requirements that do not satisfy or fall within any of the four criteria may be relocated to appropriate licensee-controlled documents. The LGS TRM is one such licensee-controlled document.

The reactor coolant system chemistry requirements are oriented toward long term reactor coolant system reliability, and do not have an immediate impact on reactor coolant system operability. Reactor coolant system operability is maintained and verified by the limiting conditions for operation and surveillance requirements that will remain in TS, e.g., reactor coolant system leakage, specific activity, pressure/temperature limits, etc., which will not be affected by the proposed changes.

The relocation of the reactor coolant system chemistry requirements to licensee-controlled documents was generically approved by the NRC in NUREG-1433, "Standard Technical Specifications, General Electric Plants (BWR/4)," which is consistent with the NRC Final Policy Statement and the revised 10 CFR 50.36 rule. In addition, similar TS changes were previously approved by the NRC for Vermont Yankee Nuclear Power Station, Amendment No. 190, dated July 18, 2000.

The proposed TS changes are administrative in nature. Relocation of the reactor coolant system chemistry requirements from the TS to licensee-controlled documents does not affect the plant design, hardware, or system operation and will not affect the ability of the reactor coolant system to perform its design function in mitigating the consequences of a postulated design basis accident. Therefore, the proposed changes do not adversely affect nuclear safety or plant operations.

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RCS Specific Activity

10 CFR Part 100 establishes approval requirements for proposed sites for stationary power subject to 10 CFR Part 50. Siting factors and criteria are important in assuring that radiological doses from normal operation and postulated accidents will be acceptably low. 10 CFR 100.11 requires that, as an aid in evaluating a proposed site, an applicant should assume a fission product release from the core, the expected demonstrable leak rate from the containment and the meteorological conditions pertinent to the site to derive an exclusion area and a low population zone. 10 CFR 100.11 specifically requires: (1) an exclusion area of such size that an individual located at any point on its boundary for two hours immediately following onset of the postulated fission product release would not receive a total radiation dose to the whole body in excess of 25 rem or a total radiation dose in excess of 300 rem to the thyroid from iodine exposure, and (2) a low population zone of such size that an individual located at any point on its outer boundary 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 total radiation dose to the whole body in excess of 25 rem or a total radiation dose in excess of 300 rem to the thyroid from iodine exposure.

The current LGS TS Section 3.4.5.a includes a limit for the specific activity of the primary coolant involving Does Equivalent I-131 which relates directly to the thyroid dose limits of 10 CFR 100.11. This TS limit on Dose Equivalent I-131 remains unchanged by the proposed TS changes. In addition, LGS TS Section 3.11.2.6 includes a limit on the activities of several isotopes of noble gases that relate to the whole body dose limits of 10 CFR 100.11. This limit also remains unchanged by the proposed TS change. The combination of these TS limits provides reasonable assurance the reactor coolant specific activity is maintained at a sufficiently low level to preclude offsite doses from exceeding a small fraction of the limits of 10 CFR Part 100.

The deletion of the reactor coolant system specific activity requirements related to E-bar, gross beta, and gross gamma from TS was generically approved by the NRC in NUREG-1433, "Standard Technical Specifications, General Electric Plants (BWR/4)." In addition, similar TS changes were previously approved by the NRC for Susquehanna Steam Electric Station, Units 1 and 2, Amendment Nos. 178 and 151, dated July 30, 1998, and Edwin I. Hatch Nuclear Plant, Units 1 and 2, Amendment Nos. 195 and 135, dated March 3, 1995.

In conclusion, based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

6.0 ENVIRONMENTAL CONSIDERATION

A review has determined that the proposed amendment would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or would change an inspection or surveillance requirement. However, the proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant

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change in the types or significant increase in the amounts of any effluents that may be released offsite, and (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement, or environmental assessment need be prepared in connection with the proposed amendment.

7.0 REFERENCES

1. Section 182a of the Atomic Energy Act of 1954 (Act), as amended (42 U.S.C. 2232)

2. 10 CFR 50.36, "Technical Specifications"

3. NRC Final Policy Statement, 10 CFR Part 50, "Final Policy Statement on Technical Specifications Improvements for Nuclear Power Reactors," 58 FR 39132, dated July 22, 1993.

4. NRC Final Rule, 10 CFR Part 50, "Technical Specifications," 60 FR 36953, dated July 19, 1995.

5. Atomic Safety and Licensing Appeal Board Decision, Portland General Electric Company (Trojan Nuclear Plant), ALAB-531, 9 NRC 263 (1979).

6. NUREG-1433, "Standard Technical Specifications, General Electric Plants (BWR/4)"

7. Vermont Yankee Nuclear Power Station, Amendment No. 190, dated July 18, 2000.

8. Susquehanna Steam Electric Station, Units 1 and 2, Amendment Nos. 178 and 151, dated July 30, 1998.

9. Edwin I. Hatch Nuclear Plant, Units 1 and 2, Amendment Nos. 195 and 135, dated March 3, 1995

Attachment 2

License Amendment Request

Limerick Generating Station, Units 1 and 2

Docket Nos. 50-352 and 50-353

Proposed Changes to the Reactor Coolant System Chemistry and Specific Activity Requirements

Marked-up Technical Specifications and Bases Pages for Proposed Changes

Unit 1 TS Page

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Unit 2 TS Page

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SECTION PAGE

DEFINITIONS

CORE ALTERATION

1.7 CORE ALTERATION shall be the movement of any fuel, sources, or reactivity control components within the reactor vessel with the vessel head removed and fuel in the vessel. The following exceptions are not considered to be CORE ALTERATIONS:

a) Movement of source range monitors, local power range monitors, intermediate range monitors, traversing incore probes, or special moveable detectors (including undervessel replacement); and

b) Control rod movement, provided there are no fuel assemblies in the associated core cell.

Suspension of CORE ALTERATIONS shall not preclude completion of movement of a component to a safe position.

CORE OPERATING LIMITS REPORT

1.7a The CORE OPERATING LIMITS REPORT (COLR) is the unit-specific document that provides the core operating limits for the current operating reload cycle. These cycle-specific core operating limits shall be determined for each reload cycle in accordance with Specifications 6.9.1.9 thru 6.9.1.12. Plant operation within these limits is addressed in individual specifications.

CRITICAL POWER RATIO

1.8 The CRITICAL POWER RATIO (CPR) shall be the ratio of that power in the assembly which is calculated by application of the (GEXL) correlation to cause some point in the assembly to experience boiling transition, divided by the actual assembly operating power.

DOSE EQUIVALENT I-131

1.9 DOSE EQUIVALENT I-131 shall be that concentration of I-131, microcuries per gram, which alone would produce the same thyroid dose as the quantity and isotopic mixture of I-131, I-132, I-133, I-134, and I-135 actually present. The thyroid dose conversion factors used for this calculation shall be those listed in Table III of TID-14844, "Calculation of Distance Factors for Power and Test Reactor Sites."

DOWNSCALE TRIP SETPOINT (DTSP)

1.9a The downscale trip setpoint associated with the Rod Block Monitor (RBM) rod block trip setting.

~~$\bar{E}$ AVERAGE DISINTEGRATION ENERGY~~

1.10 (Deleted) ~~$\bar{E}$ shall be the average, weighted in proportion to the concentration of each radionuclide in the reactor coolant at the time of sampling, of the sum of the average beta and gamma energies per disintegration, in MeV, for isotopes, with half lives greater than 15 minutes, making up at least 95% of the total noniodine activity in the coolant.~~

EMERGENCY CORE COOLING SYSTEM (ECCS) RESPONSE TIME

1.11 The EMERGENCY CORE COOLING SYSTEM (ECCS) RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its ECCS actuation set-point at the channel sensor until the ECCS equipment is capable of performing its safety function, i.e., the valves travel to their required positions, pump discharge pressures reach their required values, etc. Times shall include diesel generator starting and sequence loading delays where applicable. The response time may be measured by any series of sequential, overlapping or total steps such that the entire response time is measured.

REACTOR COOLANT SYSTEM

3/4.4.4 ~~CHEMISTRY~~

~~LIMITING CONDITION FOR OPERATION~~

~~3.4.4 The chemistry of the reactor coolant system shall be maintained within the limits specified in Table 3.4.4-1.~~

~~APPLICABILITY: At all times.~~

Replace with INSERT A

~~ACTION:~~

~~a. In OPERATIONAL CONDITION 1:~~

~~1. With the conductivity, chloride concentration or pH exceeding the limit specified in Table 3.4.4-1 for less than 72 hours during one continuous time interval and, for conductivity and chloride concentration, for less than 336 hours per year, but with the conductivity less than 10 µmho/cm at 25°C and with the chloride concentration less than 0.5 ppm, this need not be reported to the Commission and the provisions of Specification 3.0.4 are not applicable.~~

~~2. With the conductivity, chloride concentration or pH exceeding the limit specified in Table 3.4.4-1 for more than 72 hours during one continuous time interval or with the conductivity and chloride concentration exceeding the limit specified in Table 3.4.4-1 for more than 336 hours per year, be in at least STARTUP within the next 6 hours.~~

~~3. With the conductivity exceeding 10 µmho/cm at 25°C or chloride concentration exceeding 0.5 ppm, be in at least HOT SHUTDOWN within 12 hours and in COLD SHUTDOWN within the next 24 hours.~~

~~b. In OPERATIONAL CONDITION 2 and 3 with the conductivity, chloride concentration or pH exceeding the limit specified in Table 3.4.4-1 for more than 48 hours during one continuous time interval, be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.~~

~~c. At all other times:~~

~~1. With the:~~

~~a) Conductivity or pH exceeding the limit specified in Table 3.4.4-1, restore the conductivity and pH to within the limit within 72 hours, or~~

~~b) Chloride concentration exceeding the limit specified in Table 3.4.4-1, restore the chloride concentration to within the limit within 24 hours, or~~

~~perform an engineering evaluation to determine the effects of the out-of-limit condition on the structural integrity of the reactor coolant system. Determine that the structural integrity of the reactor coolant system remains acceptable for continued operation prior to proceeding to OPERATIONAL CONDITION 3.~~

~~2. The provisions of Specification 3.0.3 are not applicable.~~

INSERT A

3/4.4.4 (Deleted)

THE INFORMATION FROM THIS TECHNICAL SPECIFICATIONS SECTION HAS BEEN RELOCATED TO THE TECHNICAL REQUIREMENTS MANUAL (TRM). TECHNICAL SPECIFICATIONS PAGES 3/4 4-13 AND 3/4 4-14 HAVE BEEN INTENTIONALLY OMITTED.

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SURVEILLANCE REQUIREMENTS

4.4.4 The reactor coolant shall be determined to be within the specified chemistry limit by:

a. Measurement prior to pressurizing the reactor during each startup, if not performed within the previous 72 hours.

b. Analyzing a sample of the reactor coolant for:

1. Chlorides at least once per:

a) 72 hours, and

b) 8 hours whenever conductivity is greater than the limit in Table 3.4.4-1.

2. Conductivity at least once per 72 hours.

3. pH at least once per:

a) 72 hours, and

b) 8 hours whenever conductivity is greater than the limit in Table 3.4.4-1.

c. Continuously recording the conductivity of the reactor coolant, or, when the continuous recording conductivity monitor is inoperable for up to 31 days, obtaining an in-line conductivity measurement at least once per:

1. 4 hours in OPERATIONAL CONDITIONS 1, 2, and 3, and

2. 24 hours at all other times.

d. Performance of a CHANNEL CHECK of the continuous conductivity monitor with an in-line flow cell at least once per:

1. 7 days, and

2. 24 hours whenever conductivity is greater than the limit in in Table 3.4.4-1.

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TABLE 3.4.4-1

REACTOR COOLANT SYSTEM

CHEMISTRY LIMITS

OPERATIONAL CONDITION	CHLORIDES	CONDUCTIVITY (μmhos/cm @25°C)	pH
1	≤ 0.2 ppm	≤ 1.0	5.6 ≤ pH ≤ 8.6
2 and 3	≤ 0.1 ppm	≤ 2.0	5.6 ≤ pH ≤ 8.6
At all other times	≤ 0.5 ppm	≤ 10.0	5.3 ≤ pH ≤ 8.6

3/4.4.5 SPECIFIC ACTIVITY

LIMITING CONDITION FOR OPERATION

3.4.5 The specific activity of the primary coolant shall be limited to:

a. Less than or equal to 0.2 microcurie per gram DOSE EQUIVALENT I-131. ~~and~~

b. (Deleted) ~~Less than or equal to 100/$\bar{E}$ microcuries per gram.~~

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2, 3, and 4.

ACTION:

a. In OPERATIONAL CONDITION 1, 2, or 3 with the specific activity of the primary coolant;

1. Greater than 0.2 microcurie per gram DOSE EQUIVALENT I-131 but less than or equal to 4 microcuries per gram, DOSE EQUIVALENT I-131 for more than 48 hours during one continuous time interval or greater than 4.0 microcuries per gram DOSE EQUIVALENT I-131, be in at least HOT SHUTDOWN with the main steam line isolation valves closed within 12 hours. The provisions of Specification 3.0.4 are not applicable.

2. (Deleted) ~~Greater than 100/$\bar{E}$ microcuries per gram be in at least HOT SHUTDOWN with the main steamline isolation valves closed within 12 hours.~~

b. In OPERATIONAL CONDITION 1, 2, 3, or 4, with the specific activity of the primary coolant greater than 0.2 microcuries per gram DOSE EQUIVALENT I-131 ~~or greater than 100/$\bar{E}$ microcuries per gram~~, perform the sampling and analysis requirements of Item 4.a of Table 4.4.5-1 until the specific activity of the primary coolant is restored to within its limit.

c. In OPERATIONAL CONDITION 1 or 2, with:

1. THERMAL POWER changed by more than 15% of RATED THERMAL POWER in 1 hour, or

2. The off-gas level, at the SJAE, increased by more than 10,000 microcuries per second in 1 hour during steady-state operation at release rates less than 75,000 microcuries per second, or

3. The off-gas level, at the SJAE, increased by more than 15% in 1 hour during steady-state operation at release rates greater than 75,000 microcuries per second,

perform the sampling and analysis requirements of Item 4.b of Table 4.4.5-1 until the specific activity of the primary coolant is restored to within its limit.

TABLE 4.4.5-1

PRIMARY COOLANT SPECIFIC ACTIVITY SAMPLE AND ANALYSIS PROGRAM

TYPE OF MEASUREMENT AND ANALYSIS	SAMPLE AND ANALYSIS FREQUENCY	OPERATIONAL CONDITIONS IN WHICH SAMPLE AND ANALYSIS IS REQUIRED
1. (Deleted) ~~Gross Beta and Gamma Activity Determination~~	~~At least once per 72 hours~~	~~1, 2, 3~~
2. Isotopic Analysis for DOSE EQUIVALENT I-131 Concentration	At least once per 7~~31~~ days	1
3. (Deleted) ~~Radiochemical for $\bar{E}$ Determination~~	~~At least once per 6 months*~~	~~1~~
4. Isotopic Analysis for Iodine	a) At least once per 4 hours, whenever the specific activity exceeds a limit, as required by ACTION b.	1**, 2**, 3**, 4**
	b) At least one sample, between 2 and 6 hours following the change in THERMAL POWER or off-gas level, as required by ACTION c.	1, 2
5. Isotopic Analysis of an Off-gas Sample Including Quantitative Measurements for at least Xe-133, Xe-135, and Kr-88	At least once per 31 days	1

~~*Sample to be taken after a minimum of 2 EFPD and 20 days of POWER OPERATION have elapsed since reactor was last subcritical for 48 hours or longer.~~

** Until the specific activity of the primary coolant system is restored to within its limits.

3/4.4.3.2 OPERATIONAL LEAKAGE (Continued)

The ACTION requirements for pressure isolation valves (PIVs) are used in conjunction with the system specifications for which PIVs are listed in Table 3.4.3.2-1 and with primary containment isolation valve requirements to ensure that plant operation is appropriately limited.

The Surveillance Requirements for the RCS pressure isolation valves provide added assurance of valve integrity thereby reducing the probability of gross valve failure and consequent intersystem LOCA. Leakage from the RCS pressure isolation valves is IDENTIFIED LEAKAGE and will be considered as a portion of the allowed limit.

3/4.4.4 ~~CHEMISTRY~~ (Deleted) INFORMATION FROM THIS SECTION RELOCATED TO THE TRM

~~The water chemistry limits of the reactor coolant system are established to prevent damage to the reactor materials in contact with the coolant. Chloride limits are specified to prevent stress corrosion cracking of the stainless steel. The effect of chloride is not as great when the oxygen concentration in the coolant is low, thus the 0.2 ppm limit on chlorides is permitted during POWER OPERATION. During shutdown and refueling operations, the temperature necessary for stress corrosion to occur is not present so a 0.5 ppm concentration of chlorides is not considered harmful during these periods.~~

3/4.4.4 ~~CHEMISTRY (Continued)~~ (Deleted) INFORMATION FROM THIS SECTION RELOCATED TO THE TRM

~~Conductivity measurements are required on a continuous basis since changes in this parameter are an indication of abnormal conditions. When the conductivity is within limits, the pH, chlorides and other impurities affecting conductivity must also be within their acceptable limits. With the conductivity meter inoperable, additional samples must be analyzed to ensure that the chlorides are not exceeding the limits.~~

~~The surveillance requirements provide adequate assurance that concentrations in excess of the limits will be detected in sufficient time to take corrective action.~~

3/4.4.5 SPECIFIC ACTIVITY

The limitations on the specific activity of the primary coolant ensure that the 2 hour thyroid and whole body doses resulting from a main steam line failure outside the containment during steady state operation will not exceed small fractions of the dose guidelines of 10 CFR Part 100. The values for the limits on specific activity represent interim limits based upon a parametric evaluation by the NRC of typical site locations. These values are conservative in that specific site parameters, such as SITE BOUNDARY location and meteorological conditions, were not considered in this evaluation.

The ACTION statement permitting POWER OPERATION to continue for limited time periods with the primary coolant's specific activity greater than 0.2 microcurie per gram DOSE EQUIVALENT I-131, but less than or equal to 4 microcuries per gram DOSE EQUIVALENT I-131, accommodates possible iodine spiking phenomenon which may occur following changes in the THERMAL POWER. Operation with specific activity levels exceeding 0.2 microcurie per gram DOSE EQUIVALENT I-131 but less than or equal to 4 microcuries per gram DOSE EQUIVALENT I-131 must be restricted since these activity levels increase the 2-hour thyroid dose at the SITE BOUNDARY following a postulated steam line rupture.

Closing the main steam line isolation valves prevents the release of activity to the environs should a steam line rupture occur outside containment. The surveillance requirements provide adequate assurance that excessive specific activity levels in the reactor coolant will be detected in sufficient time to take corrective action.

3/4.4.6 PRESSURE/TEMPERATURE LIMITS

All components in the reactor coolant system are designed to withstand the effects of cyclic loads due to system temperature and pressure changes. These cyclic loads are introduced by normal load transients, reactor trips, and startup and shutdown operations. The various categories of load cycles used for design purposes are provided in Section 3.9 of the FSAR. During startup and shutdown, the rates of temperature and pressure changes are limited so that the maximum specified heatup and cooldown rates are consistent with the design assumptions and satisfy the stress limits for cyclic operation.

LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS

CORE ALTERATION

1.7 CORE ALTERATION shall be the movement of any fuel, sources, or reactivity control components within the reactor vessel with the vessel head removed and fuel in the vessel. The following exceptions are not considered to be CORE ALTERATIONS:

a) Movement of source range monitors, local power range monitors, intermediate range monitors, traversing incore probes, or special moveable detectors (including undervessel replacement); and
b) Control rod movement, provided there are no fuel assemblies in the associated core cell.

Suspension of CORE ALTERATIONS shall not preclude completion of movement of a component to a safe position.

CORE OPERATING LIMITS REPORT

1.7a The CORE OPERATING LIMITS REPORT (COLR) is the unit-specific document that provides the core operating limits for the current operating reload cycle. These cycle-specific core operating limits shall be determined for each reload cycle in accordance with Specifications 6.9.1.9 thru 6.9.12. Plant operation within these limits is addressed in individual specifications.

CRITICAL POWER RATIO

1.8 The CRITICAL POWER RATIO (CPR) shall be the ratio of that power in the assembly which is calculated by application of the (GEXL) correlation to cause some point in the assembly to experience boiling transition, divided by the actual assembly operating power.

DOSE EQUIVALENT I-131

1.9 DOSE EQUIVALENT I-131 shall be that concentration of I-131, microcuries per gram, which alone would produce the same thyroid dose as the quantity and isotopic mixture of I-131, I-132, I-133, I-134, and I-135 actually present. The thyroid dose conversion factors used for this calculation shall be those listed in Table III of TID-14844, "Calculation of Distance Factors for Power and Test Reactor Sites."

DOWNSCALE TRIP SETPOINT (DTSP)

1.9a The downscale trip setpoint associated with the Rod Block Monitor (RBM) rod block trip setting.

~~$\bar{E}$ AVERAGE DISINTEGRATION ENERGY~~

1.10 (Deleted) ~~$\bar{E}$ shall be the average, weighted in proportion to the concentration of each radionuclide in the reactor coolant at the time of sampling, of the sum of the average beta and gamma energies per disintegration, in MeV, for isotopes, with half lives greater than 15 minutes, making up at least 95% of the total noniodine activity in the coolant.~~

EMERGENCY CORE COOLING SYSTEM (ECCS) RESPONSE TIME

1.11 The EMERGENCY CORE COOLING SYSTEM (ECCS) RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its ECCS actuation set-point at the channel sensor until the ECCS equipment is capable of performing its safety function, i.e., the valves travel to their required positions, pump discharge pressures reach their required values, etc. Times shall include diesel generator starting and sequence loading delays where applicable. The response time may be measured by any series of sequential, overlapping or total steps such that the entire response time is measured.

REACTOR COOLANT SYSTEM

3/4.4.4 ~~CHEMISTRY~~

~~LIMITING CONDITION FOR OPERATION~~

~~3.4.4 The chemistry of the reactor coolant system shall be maintained within the limits specified in Table 3.4.4-1.~~

~~APPLICABILITY: At all times.~~

~~ACTION:~~

Replace with INSERT A

~~a. In OPERATIONAL CONDITION 1:~~

~~1. With the conductivity, chloride concentration or pH exceeding the limit specified in Table 3.4.4-1 for less than 72 hours during one continuous time interval and, for conductivity and chloride concentration, for less than 336 hours per year, but with the conductivity less than 10 µmho/cm at 25°C and with the chloride concentration less than 0.5 ppm, this need not be reported to the Commission and the provisions of Specification 3.0.4 are not applicable.~~

~~2. With the conductivity, chloride concentration or pH exceeding the limit specified in Table 3.4.4-1 for more than 72 hours during one continuous time interval or with the conductivity and chloride concentration exceeding the limit specified in Table 3.4.4-1 for more than 336 hours per year, be in at least STARTUP within the next 6 hours.~~

~~3. With the conductivity exceeding 10 µmho/cm at 25°C or chloride concentration exceeding 0.5 ppm, be in at least HOT SHUTDOWN within 12 hours and in COLD SHUTDOWN within the next 24 hours.~~

~~b. In OPERATIONAL CONDITION 2 and 3 with the conductivity, chloride concentration or pH exceeding the limit specified in Table 3.4.4-1 for more than 48 hours during one continuous time interval, be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.~~

~~c. At all other times:~~

~~1. With the:~~

~~a) Conductivity or pH exceeding the limit specified in Table 3.4.4-1, restore the conductivity and pH to within the limit within 72 hours, or~~

~~b) Chloride concentration exceeding the limit specified in Table 3.4.4-1, restore the chloride concentration to within the limit within 24 hours, or~~

~~perform an engineering evaluation to determine the effects of the out-of-limit condition on the structural integrity of the reactor coolant system. Determine that the structural integrity of the reactor coolant system remains acceptable for continued operation prior to proceeding to OPERATIONAL CONDITION 3.~~

~~2. The provisions of Specification 3.0.3 are not applicable.~~

INSERT A

3/4.4.4 (Deleted)

THE INFORMATION FROM THIS TECHNICAL SPECIFICATIONS SECTION HAS BEEN RELOCATED TO THE TECHNICAL REQUIREMENTS MANUAL (TRM). TECHNICAL SPECIFICATIONS PAGES 3/4 4-13 AND 3/4 4-14 HAVE BEEN INTENTIONALLY OMITTED.

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SURVEILLANCE REQUIREMENTS

4.4.4 The reactor coolant shall be determined to be within the specified chemistry limit by:

a. Measurement prior to pressurizing the reactor during each startup, if not performed within the previous 72 hours.

b. Analyzing a sample of the reactor coolant for:

1. Chlorides at least once per:

a) 72 hours, and

b) 8 hours whenever conductivity is greater than the limit in Table 3.4.4-1.

2. Conductivity at least once per 72 hours.

3. pH at least once per:

a) 72 hours, and

b) 8 hours whenever conductivity is greater than the limit in Table 3.4.4-1.

c. Continuously recording the conductivity of the reactor coolant, or, when the continuous recording conductivity monitor is inoperable for up to 31 days, obtaining an in-line conductivity measurement at least once per:

1. 4 hours in OPERATIONAL CONDITIONS 1, 2, and 3, and

2. 24 hours at all other times.

d. Performance of a CHANNEL CHECK of the continuous conductivity monitor with an in-line flow cell at least once per:

1. 7 days, and

2. 24 hours whenever conductivity is greater than the limit in Table 3.4.4-1.

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~~TABLE 3.4.4-1~~

~~REACTOR COOLANT SYSTEM~~

~~CHEMISTRY LIMITS~~

~~OPERATIONAL CONDITION~~	~~CHLORIDES~~	~~CONDUCTIVITY (μmhos/cm @25°C)~~	~~pH~~
~~1~~	~~≤ 0.2 ppm~~	~~≤ 1.0~~	~~5.6 ≤ pH ≤ 8.6~~
~~2 and 3~~	~~≤ 0.1 ppm~~	~~≤ 2.0~~	~~5.6 ≤ pH ≤ 8.6~~
~~At all other times~~	~~≤ 0.5 ppm~~	~~≤ 10.0~~	~~5.3 ≤ pH ≤ 8.6~~

3/4.4.5 SPECIFIC ACTIVITY

LIMITING CONDITION FOR OPERATION

3.4.5 The specific activity of the primary coolant shall be limited to:

a. Less than or equal to 0.2 microcurie per gram DOSE EQUIVALENT I-131. ~~and~~

b. (Deleted) ~~Less than or equal to 100/$\bar{E}$ microcuries per gram.~~

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2, 3, and 4.

ACTION:

a. In OPERATIONAL CONDITION 1, 2, or 3 with the specific activity of the primary coolant;

1. Greater than 0.2 microcurie per gram DOSE EQUIVALENT I-131 but less than or equal to 4 microcuries per gram, DOSE EQUIVALENT I-131 for more than 48 hours during one continuous time interval or greater than 4.0 microcuries per gram DOSE EQUIVALENT I-131, be in at least HOT SHUTDOWN with the main steam line isolation valves closed within 12 hours. The provisions of Specification 3.0.4 are not applicable.

2. (Deleted) ~~Greater than 100/$\bar{E}$ microcurie per gram be in at least HOT SHUTDOWN with the main steam line isolation valves closed within 12 hours.~~

b. In OPERATIONAL CONDITION 1, 2, 3, or 4, with the specific activity of the primary coolant greater than 0.2 microcuries per gram DOSE EQUIVALENT I-131 ~~or greater than 100/$\bar{E}$ microcuries per gram~~, perform the sampling and analysis requirements of Item 4.a of Table 4.4.5-1 until the specific activity of the primary coolant is restored to within its limit.

c. In OPERATIONAL CONDITION 1 or 2, with:

1. THERMAL POWER changed by more than 15% of RATED THERMAL POWER in 1 hour*, or

2. The off-gas level, at the SJAE, increased by more than 10,000 microcuries per second in 1 hour during steady-state operation at release rates less than 75,000 microcuries per second, or

3. The off-gas level, at the SJAE, increased by more than 15% in 1 hour during steady-state operation at release rates greater than 75,000 microcuries per second,

perform the sampling and analysis requirements of Item 4.b of Table 4.4.5-1 until the specific activity of the primary coolant is restored to within its limit.

*Not applicable during the startup test program.

TABLE 4.4.5-1

PRIMARY COOLANT SPECIFIC ACTIVITY SAMPLE AND ANALYSIS PROGRAM

TYPE OF MEASUREMENT AND ANALYSIS	SAMPLE AND ANALYSIS FREQUENCY	OPERATIONAL CONDITIONS IN WHICH SAMPLE AND ANALYSIS IS REQUIRED
1. (Deleted) ~~Gross Beta and Gamma Activity Determination~~	~~At least once per 72 hours~~	~~1, 2, 3~~
2. Isotopic Analysis for DOSE EQUIVALENT I-131 Concentration	At least once per 7~~31~~ days	1
3. (Deleted) ~~Radiochemical for $\bar{E}$ Determination~~	~~At least once per 6 months*~~	~~1~~
4. Isotopic Analysis for Iodine	a) At least once per 4 hours whenever the specific activity exceeds a limit, as required by ACTION b.	1**, 2**, 3**, 4**
	b) At least one sample, between 2 and 6 hours following the change in THERMAL POWER or off-gas level, as required by ACTION c.	1, 2
5. Isotopic Analysis of an Off-gas Sample Including Quantitative Measurements for at least Xe-133, Xe-135, and Kr-88	At least once per 31 days	1

~~*Sample to be taken after a minimum of 2 EFPD and 20 days of POWER OPERATION have elapsed since reactor was last suberitical for 48 hours or longer.~~

**Until the specific activity of the primary coolant system is restored to within its limits.

3/4.4.3.2 OPERATIONAL LEAKAGE (Continued)

The ACTION requirements for pressure isolation valves (PIVs) are used in conjunction with the system specifications for which PIVs are listed in Table 3.4.3.2-1 and with primary containment isolation valve requirements to ensure that plant operation is appropriately limited.

The Surveillance Requirements for the RCS pressure isolation valves provide added assurance of valve integrity thereby reducing the probability of gross valve failure and consequent intersystem LOCA. Leakage from the RCS pressure isolation valves is IDENTIFIED LEAKAGE and will be considered as a portion of the allowed limit.

3/4.4.4 ~~CHEMISTRY~~ (Deleted) INFORMATION FROM THIS SECTION RELOCATED TO THE TRM

~~The water chemistry limits of the reactor coolant system are established to prevent damage to the reactor materials in contact with the coolant. Chloride limits are specified to prevent stress corrosion cracking of the stainless steel. The effect of chloride is not as great when the oxygen concentration in the coolant is low, thus the 0.2 ppm limit on chlorides is permitted during POWER OPERATION. During shutdown and refueling operations, the temperature necessary for stress corrosion to occur is not present so a 0.5 ppm concentration of chlorides is not considered harmful during these periods.~~

~~Conductivity measurements are required on a continuous basis since changes in this parameter are an indication of abnormal conditions. When the conductivity is within limits, the pH, chlorides and other impurities affecting conductivity must also be within their acceptable limits. With the conductivity meter inoperable, additional samples must be analyzed to ensure that the chlorides are not exceeding the limits.~~

~~The surveillance requirements provide adequate assurance that concentrations in excess of the limits will be detected in sufficient time to take corrective action.~~

Attachment 3

License Amendment Request

Limerick Generating Station, Units 1 and 2

Docket Nos. 50-352 and 50-353

Proposed Changes to the Reactor Coolant System Chemistry and Specific Activity Requirements

Typed Technical Specifications and Bases Pages for Proposed Changes

Unit 1 TS Page

Xi
1-2
3/4 4-12
3/4 4-15
3/4 4-17
B 3/4 4-3e
B 3/4 4-4

Unit 2 TS Page

Xi
1-2
3/4 4-12
3/4 4-15
3/4 4-17
B 3/4 4-3e

CORE ALTERATION

1.7 CORE ALTERATION shall be the movement of any fuel, sources, or reactivity control components within the reactor vessel with the vessel head removed and fuel in the vessel. The following exceptions are not considered to be CORE ALTERATIONS:

a) Movement of source range monitors, local power range monitors, intermediate range monitors, traversing incore probes, or special moveable detectors (including undervessel replacement); and
b) Control rod movement, provided there are no fuel assemblies in the associated core cell.

Suspension of CORE ALTERATIONS shall not preclude completion of movement of a component to a safe position.

CORE OPERATING LIMITS REPORT

1.7a The CORE OPERATING LIMITS REPORT (COLR) is the unit-specific document that provides the core operating limits for the current operating reload cycle. These cycle-specific core operating limits shall be determined for each reload cycle in accordance with Specifications 6.9.1.9 thru 6.9.1.12. Plant operation within these limits is addressed in individual specifications.

CRITICAL POWER RATIO

1.8 The CRITICAL POWER RATIO (CPR) shall be the ratio of that power in the assembly which is calculated by application of the (GEXL) correlation to cause some point in the assembly to experience boiling transition, divided by the actual assembly operating power.

DOSE EQUIVALENT I-131

1.9 DOSE EQUIVALENT I-131 shall be that concentration of I-131, microcuries per gram, which alone would produce the same thyroid dose as the quantity and isotopic mixture of I-131, I-132, I-133, I-134, and I-135 actually present. The thyroid dose conversion factors used for this calculation shall be those listed in Table III of TID-14844, "Calculation of Distance Factors for Power and Test Reactor Sites."

DOWNSCALE TRIP SETPOINT (DTSP)

1.9a The downscale trip setpoint associated with the Rod Block Monitor (RBM) rod block trip setting.

1.10 (Deleted)

EMERGENCY CORE COOLING SYSTEM (ECCS) RESPONSE TIME

1.11 The EMERGENCY CORE COOLING SYSTEM (ECCS) RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its ECCS actuation set-point at the channel sensor until the ECCS equipment is capable of performing its safety function, i.e., the valves travel to their required positions, pump discharge pressures reach their required values, etc. Times shall include diesel generator starting and sequence loading delays where applicable. The response time may be measured by any series of sequential, overlapping or total steps such that the entire response time is measured.

3/4.4.4 (DELETED)

THE INFORMATION FROM THIS TECHNICAL SPECIFICATIONS SECTION HAS BEEN RELOCATED TO THE TECHNICAL REQUIREMENTS MANUAL (TRM). TECHNICAL SPECIFICATIONS PAGES 3/4 4-13 AND 3/4 4-14 HAVE BEEN INTENTIONALLY OMITTED.

3/4.4.5 SPECIFIC ACTIVITY

LIMITING CONDITION FOR OPERATION

3.4.5 The specific activity of the primary coolant shall be limited to:

a. Less than or equal to 0.2 microcurie per gram DOSE EQUIVALENT I-131.

b. (Deleted)

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2, 3, and 4.

ACTION:

a. In OPERATIONAL CONDITION 1, 2, or 3 with the specific activity of the primary coolant;

1. Greater than 0.2 microcurie per gram DOSE EQUIVALENT I-131 but less than or equal to 4 microcuries per gram, DOSE EQUIVALENT I-131 for more than 48 hours during one continuous time interval or greater than 4.0 microcuries per gram DOSE EQUIVALENT I-131, be in at least HOT SHUTDOWN with the main steam line isolation valves closed within 12 hours. The provisions of Specification 3.0.4 are not applicable.

2. (Deleted)

b. In OPERATIONAL CONDITION 1, 2, 3, or 4, with the specific activity of the primary coolant greater than 0.2 microcuries per gram DOSE EQUIVALENT I-131, perform the sampling and analysis requirements of Item 4.a of Table 4.4.5-1 until the specific activity of the primary coolant is restored to within its limit.

c. In OPERATIONAL CONDITION 1 or 2, with:

1. THERMAL POWER changed by more than 15% of RATED THERMAL POWER in 1 hour, or

2. The off-gas level, at the SJAE, increased by more than 10,000 microcuries per second in 1 hour during steady-state operation at release rates less than 75,000 microcuries per second, or

3. The off-gas level, at the SJAE, increased by more than 15% in 1 hour during steady-state operation at release rates greater than 75,000 microcuries per second,

perform the sampling and analysis requirements of Item 4.b of Table 4.4.5-1 until the specific activity of the primary coolant is restored to within its limit.

TABLE 4.4.5-1

PRIMARY COOLANT SPECIFIC ACTIVITY SAMPLE AND ANALYSIS PROGRAM

TYPE OF MEASUREMENT AND ANALYSIS	SAMPLE AND ANALYSIS FREQUENCY	OPERATIONAL CONDITIONS IN WHICH SAMPLE AND ANALYSIS IS REQUIRED
1. (Deleted)		
2. Isotopic Analysis for DOSE EQUIVALENT I-131 Concentration	At least once per 7 days	1
3. (Deleted)		
4. Isotopic Analysis for Iodine	a) At least once per 4 hours, whenever the specific activity exceeds a limit, as required by ACTION b.	1**, 2**, 3**, 4**
	b) At least one sample, between 2 and 6 hours following the change in THERMAL POWER or off-gas level, as required by ACTION c.	1, 2
5. Isotopic Analysis of an Off-gas Sample Including Quantitative Measurements for at least Xe-133, Xe-135, and Kr-88	At least once per 31 days	1

**Until the specific activity of the primary coolant system is restored to within its limits.

3/4.4.3.2 OPERATIONAL LEAKAGE (Continued)

The ACTION requirements for pressure isolation valves (PIVs) are used in conjunction with the system specifications for which PIVs are listed in Table 3.4.3.2-1 and with primary containment isolation valve requirements to ensure that plant operation is appropriately limited.

The Surveillance Requirements for the RCS pressure isolation valves provide added assurance of valve integrity thereby reducing the probability of gross valve failure and consequent intersystem LOCA. Leakage from the RCS pressure isolation valves is IDENTIFIED LEAKAGE and will be considered as a portion of the allowed limit.

3/4.4.4 (Deleted) INFORMATION FROM THIS SECTION RELOCATED TO THE TRM

3/4.4.4 (Deleted) INFORMATION FROM THIS SECTION RELOCATED TO THE TRM

3/4.4.5 SPECIFIC ACTIVITY

The limitations on the specific activity of the primary coolant ensure that the 2 hour thyroid and whole body doses resulting from a main steam line failure outside the containment during steady state operation will not exceed small fractions of the dose guidelines of 10 CFR Part 100. The values for the limits on specific activity represent interim limits based upon a parametric evaluation by the NRC of typical site locations. These values are conservative in that specific site parameters, such as SITE BOUNDARY location and meteorological conditions, were not considered in this evaluation.

The ACTION statement permitting POWER OPERATION to continue for limited time periods with the primary coolant's specific activity greater than 0.2 microcurie per gram DOSE EQUIVALENT I-131, but less than or equal to 4 microcuries per gram DOSE EQUIVALENT I-131, accommodates possible iodine spiking phenomenon which may occur following changes in the THERMAL POWER. Operation with specific activity levels exceeding 0.2 microcurie per gram DOSE EQUIVALENT I-131 but less than or equal to 4 microcuries per gram DOSE EQUIVALENT I-131 must be restricted since these activity levels increase the 2-hour thyroid dose at the SITE BOUNDARY following a postulated steam line rupture.

Closing the main steam line isolation valves prevents the release of activity to the environs should a steam line rupture occur outside containment. The surveillance requirements provide adequate assurance that excessive specific activity levels in the reactor coolant will be detected in sufficient time to take corrective action.

3/4.4.6 PRESSURE/TEMPERATURE LIMITS

All components in the reactor coolant system are designed to withstand the effects of cyclic loads due to system temperature and pressure changes. These cyclic loads are introduced by normal load transients, reactor trips, and startup and shutdown operations. The various categories of load cycles used for design purposes are provided in Section 3.9 of the FSAR. During startup and shutdown, the rates of temperature and pressure changes are limited so that the maximum specified heatup and cooldown rates are consistent with the design assumptions and satisfy the stress limits for cyclic operation.

LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS

CORE ALTERATION

1.7 CORE ALTERATION shall be the movement of any fuel, sources, or reactivity control components within the reactor vessel with the vessel head removed and fuel in the vessel. The following exceptions are not considered to be CORE ALTERATIONS:

a) Movement of source range monitors, local power range monitors, intermediate range monitors, traversing incore probes, or special moveable detectors (including undervessel replacement); and
b) Control rod movement, provided there are no fuel assemblies in the associated core cell.

Suspension of CORE ALTERATIONS shall not preclude completion of movement of a component to a safe position.

CORE OPERATING LIMITS REPORT

1.7a The CORE OPERATING LIMITS REPORT (COLR) is the unit-specific document that provides the core operating limits for the current operating reload cycle. These cycle-specific core operating limits shall be determined for each reload cycle in accordance with Specifications 6.9.1.9 thru 6.9.12. Plant operation within these limits is addressed in individual specifications.

CRITICAL POWER RATIO

1.8 The CRITICAL POWER RATIO (CPR) shall be the ratio of that power in the assembly which is calculated by application of the (GEXL) correlation to cause some point in the assembly to experience boiling transition, divided by the actual assembly operating power.

DOSE EQUIVALENT I-131

1.9 DOSE EQUIVALENT I-131 shall be that concentration of I-131, microcuries per gram, which alone would produce the same thyroid dose as the quantity and isotopic mixture of I-131, I-132, I-133, I-134, and I-135 actually present. The thyroid dose conversion factors used for this calculation shall be those listed in Table III of TID-14844, "Calculation of Distance Factors for Power and Test Reactor Sites."

DOWNSCALE TRIP SETPOINT (DTSP)

1.9a The downscale trip setpoint associated with the Rod Block Monitor (RBM) rod block trip setting.

1.10 (Deleted)

EMERGENCY CORE COOLING SYSTEM (ECCS) RESPONSE TIME

1.11 The EMERGENCY CORE COOLING SYSTEM (ECCS) RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its ECCS actuation set-point at the channel sensor until the ECCS equipment is capable of performing its safety function, i.e., the valves travel to their required positions, pump discharge pressures reach their required values, etc. Times shall include diesel generator starting and sequence loading delays where applicable. The response time may be measured by any series of sequential, overlapping or total steps such that the entire response time is measured.

3/4.4.4 (Deleted)

THE INFORMATION FROM THIS TECHNICAL SPECIFICATIONS SECTION HAS BEEN RELOCATED TO THE TECHNICAL REQUIREMENTS MANUAL (TRM). TECHNICAL SPECIFICATIONS PAGES 3/4 4-13 AND 3/4 4-14 HAVE BEEN INTENTIONALLY OMITTED.

3/4.4.5 SPECIFIC ACTIVITY

LIMITING CONDITION FOR OPERATION

3.4.5 The specific activity of the primary coolant shall be limited to:

a. Less than or equal to 0.2 microcurie per gram DOSE EQUIVALENT I-131.

b. (Deleted)

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2, 3, and 4.

ACTION:

a. In OPERATIONAL CONDITION 1, 2, or 3 with the specific activity of the primary coolant;

1. Greater than 0.2 microcurie per gram DOSE EQUIVALENT I-131 but less than or equal to 4 microcuries per gram, DOSE EQUIVALENT I-131 for more than 48 hours during one continuous time interval or greater than 4.0 microcuries per gram DOSE EQUIVALENT I-131, be in at least HOT SHUTDOWN with the main steam line isolation valves closed within 12 hours. The provisions of Specification 3.0.4 are not applicable.

2. (Deleted)

b. In OPERATIONAL CONDITION 1, 2, 3, or 4, with the specific activity of the primary coolant greater than 0.2 microcuries per gram DOSE EQUIVALENT I-131, perform the sampling and analysis requirements of Item 4.a of Table 4.4.5-1 until the specific activity of the primary coolant is restored to within its limit.

c. In OPERATIONAL CONDITION 1 or 2, with:

1. THERMAL POWER changed by more than 15% of RATED THERMAL POWER in 1 hour*, or

2. The off-gas level, at the SJAE, increased by more than 10,000 microcuries per second in 1 hour during steady-state operation at release rates less than 75,000 microcuries per second, or

3. The off-gas level, at the SJAE, increased by more than 15% in 1 hour during steady-state operation at release rates greater than 75,000 microcuries per second,

perform the sampling and analysis requirements of Item 4.b of Table 4.4.5-1 until the specific activity of the primary coolant is restored to within its limit.

*Not applicable during the startup test program.

TABLE 4.4.5-1

PRIMARY COOLANT SPECIFIC ACTIVITY SAMPLE AND ANALYSIS PROGRAM

TYPE OF MEASUREMENT AND ANALYSIS	SAMPLE AND ANALYSIS FREQUENCY	OPERATIONAL CONDITIONS IN WHICH SAMPLE AND ANALYSIS IS REQUIRED
1. (Deleted)		
2. Isotopic Analysis for DOSE EQUIVALENT I-131 Concentration	At least once per 7 days	1
3. (Deleted)		
4. Isotopic Analysis for Iodine	a) At least once per 4 hours whenever the specific activity exceeds a limit, as required by ACTION b.	1**, 2**, 3**, 4**
	b) At least one sample, between 2 and 6 hours following the change in THERMAL POWER or off-gas level, as required by ACTION c.	1, 2
5. Isotopic Analysis of an Off-gas Sample Including Quantitative Measurements for at least Xe-133, Xe-135, and Kr-88	At least once per 31 days	1

**Until the specific activity of the primary coolant system is restored to within its limits.

3/4.4.3.2 OPERATIONAL LEAKAGE (Continued)

The ACTION requirements for pressure isolation valves (PIVs) are used in conjunction with the system specifications for which PIVs are listed in Table 3.4.3.2-1 and with primary containment isolation valve requirements to ensure that plant operation is appropriately limited.

The Surveillance Requirements for the RCS pressure isolation valves provide added assurance of valve integrity thereby reducing the probability of gross valve failure and consequent intersystem LOCA. Leakage from the RCS pressure isolation valves is IDENTIFIED LEAKAGE and will be considered as a portion of the allowed limit.

3/4.4.4 (Deleted) INFORMATION FROM THIS SECTION RELOCATED TO THE TRM