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PSEG Nuclear LLC

10 CFR 50.90

LR-N20-0003
LAR S20-01

September 17, 2020

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

Salem Generating Station, Units 1 and 2
Renewed Facility Operating License Nos. DPR-70 and DPR-75
NRC Docket Nos. 50-272 and 50-311

Subject: **License Amendment Request to Adopt TSTF-490, "Deletion of E-Bar Definition and Revision to RCS Specific Activity Tech Spec"**

In accordance with the provisions of 10 CFR 50.90, PSEG Nuclear, LLC (PSEG) requests an amendment to Technical Specifications (TS) for Salem Generating Station. The proposed amendment would replace the current TS limit on the reactor coolant system (RCS) gross specific activity with a new limit on RCS noble gas specific activity. The noble gas specific activity would be based on a new dose equivalent Xe-133 (DEX) definition that would replace the current E-Bar average disintegration energy definition.

The proposed changes are consistent with NRC-approved Industry Technical Specification Task Force Standard Technical Specification Change Traveler, TSTF-490, Revision 0, "Deletion of E-Bar Definition and Revision to RCS Specific Activity Tech Spec."

Attachment 1 provides a description of the proposed change, consistent with the NRC model application published for TSTF-490.

Attachment 2 provides the existing TS pages marked up to show the proposed changes for Salem Units 1 and 2.

Attachment 3 provides, for information only, the marked-up TS Bases pages.

Approval of the proposed amendment is requested in accordance with standard NRC approval process and schedule. Once approved, the amendment shall be implemented within 60 days from the date of issuance.

In accordance with 10 CFR 50.91, a copy of this application, with attachments, is being provided to the designated State of New Jersey Official.

There are no regulatory commitments contained in this letter.

If you have any questions or require additional information, please contact Michael Wiwel at 856-339-7907.

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

Executed on 9/17/2020
(Date)

Respectfully,

Charles V. McFeaters
Site Vice President
Salem Generating Station

Attachments:
1. Evaluation of Proposed Changes
2. Markup of Proposed Technical Specification Pages for Salem Units 1 and 2
3. Marked up Technical specification Bases Pages for Information Only

cc: Administrator, Region I, NRC
Project Manager, NRC
NRC Senior Resident Inspector, Salem
Mr. P. Mulligan, Chief, NJBNE
Corporate Commitment Tracking Coordinator
Salem Commitment Tracking Coordinator

Attachment 1

Evaluation of Proposed Changes

Table of Contents

1.0 DESCRIPTION

The proposed changes would replace the current limits on primary coolant gross specific activity with limits on primary coolant noble gas activity. The noble gas activity would be based on DOSE EQUIVALENT XE-133 and would take into account only the noble gas activity in the primary coolant. The changes were approved by the NRC staff Safety Evaluation (SE) dated March 15, 2007 (Reference 2). Technical Specification Task Force (TSTF) change traveler TSTF–490, Revision 0, "Deletion of E Bar Definition and Revision to RCS Specific Activity Tech Spec" was announced for availability in Reference 2 as part of the consolidated line item improvement process (CLIIP). By memorandum from the Chief, Licensing Processes Branch, to the Plant Licensing Branch Chiefs, dated March 14, 2012, the NRC staff indicated that License Amendment Requests (LARs) related to TSTF-490 can be accepted for review, but will be handled through the normal LAR review process, instead of the expedited six-month CLIIP schedule.

2.0 PROPOSED CHANGES

PSEG is proposing the following changes to the Salem Technical Specifications (TS). Salem has not adopted NUREG-1431, Rev. 4, “Standard Technical Specifications (STS) – Westinghouse Plants” (Reference 3), therefore, there are minor variations from the TS changes described in TSTF-490, Revision 0, to provide consistent terminology and formatting with the Salem TS. These minor variations from the specific TSTF-490 wording and format do not change the applicability or technical intent of the changes described in the TSTF.

The proposed TS changes are summarized below, with the corresponding TSTF-490, Revision 0 changes annotated as bullets below the corresponding Salem TS change.

2.1 Revise the TS 1.10 definition of DOSE EQUIVALENT I-131.

- The proposed definition is equivalent to the TSTF-490 1.1 Definitions, DOSE EQUIVALENT I-131. TSTF-490 identifies several options for dose conversion factors within the DOSE EQUIVALENT I-131 definition. The specific dose conversion factors proposed by Salem are discussed in Section 4.0.

2.2 Delete the TS 1.11 definition of $\bar{E}$-AVERAGE DISINTEGRATION ENERGY and replace with new TS 1.11 definition for DOSE EQUIVALENT XE-133. $\bar{E}$-AVERAGE DISINTEGRATION ENERGY is also replaced by DOSE EQUIVALENT XE-133 in the TS INDEX Page for DEFINITIONS.

- The proposed definition is equivalent to the TSTF-490 1.1 Definitions, $\bar{E}$-AVERAGE DISINTEGRATION ENERGY. PSEG is proposing to delete the definition of $\bar{E}$-AVERAGE DISINTEGRATION ENERGY and replace it with a new definition for DOSE EQUIVALENT XE-133.

2.3 Revise LCO 3.4.8 (Salem 1) and LCO 3.4.9 (Salem 2), “RCS Specific Activity,” to delete references to $\bar{E}$ and add limits for DOSE EQUIVALENT XE-133.

- The proposed LCO is equivalent to TSTF-490 LCO 3.4.16 RCS Specific Activity. The numbering differs from the TSTF in order to remain consistent with Salem’s current TS. In addition, specific numeric limits are provided instead of stating,

"activity shall be within limits" from the TSTF model, to remain consistent with Salem TS formatting.

2.4 Revise LCO 3.4.8 (Salem 1) and LCO 3.4.9 (Salem 2) "Applicability" to specify the LCO is applicable in Modes 1, 2, 3, and 4.

- The proposed LCO is equivalent to TSTF-490 LCO 3.4.16, Applicability. In MODES 1, 2, 3, and 4, operation within the LCO limits for DOSE EQUIVALENT I-131 and DOSE EQUIVALENT XE-133 is necessary to limit the potential consequences of a Main Steam Line Break (MSLB) or Steam Generator Tube Rupture (SGTR). In MODES 5 and 6, the steam generators are not being used for decay heat removal, the RCS and steam generators are depressurized, and primary to secondary leakage is minimal. Therefore, the monitoring of RCS specific activity is not required.

2.5 Delete TS Figure 3.4-1, "DOSE EQUIVALENT I-131 Primary Coolant Specific Activity Limit Versus Percent of RATED THERMAL POWER with the Primary Coolant Specific Activity > 1.0 µCi/gram Dose Equivalent I-131."

- The deletion of Figure 3.4-1 is equivalent to the deletion of TSTF-490 Figure 3.4.16-1.

2.6 Delete TS Table 4.4-4, "Primary Coolant Specific Activity Sample and Analysis Program."

- There is no equivalent to Salem TS Table 4.4-4 found in the STS / TSTF-490. Salem TS Table 4.4-4 provides the details of Surveillance requirements which are replaced by two new surveillance requirements under SR 4.4.8.1 and 4.4.8.2 (Salem 1), and SR 4.4.9.1 and 4.4.9.2 (Salem 2) as part of the proposed implementation of TSTF-490. The newly proposed surveillance requirements are discussed below in Section 2.8. The sampling and analysis actions that were identified in TS Table 4.4-4 are established in the revised TS LCO Action 3.4.8.a.1 (Salem 1) and LCO Action 3.4.9.a.1 (Salem 2) described below in Section 2.7.

2.7 Replace the current the LCO 3.4.8 (Salem 1) and LCO 3.4.9 (Salem 2) ACTIONS with the following:

NOTE
LCO 3.0.4.c is applicable

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a. With the specific activity of the primary coolant > 1.0 µCi/gram DOSE EQUIVALENT I-131:

   1. Verify DOSE EQUIVALENT I-131 ≤ 60 µCi/gram at least once every 4 hours and restore DOSE EQUIVALENT I-131 to ≤ 1.0 µCi/gram within 48 hours, or

   2. Be in HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. With the specific activity of the primary coolant > 600 µCi/gram DOSE EQUIVALENT XE-133:

1. Restore DOSE EQUIVALENT XE-133 to ≤ 600 µCi/gram within 48 hours, or

2. Be in HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours.

- The proposed LCO actions are equivalent to LCO 3.4.16, Required Actions A.1, A.2, B.1, C.1, and C.2 in TSTF-490, but formatted and worded for consistency with the Salem TS.

2.8 Revise Surveillance Requirements (SR) 4.4.8 (Salem 1) and SR 4.4.9 (Salem 2) to replace Table 4.4-4 with two new SRs. SR 4.4.8.1 (Salem 1) and SR 4.4.9.1 (Salem 2) will verify DOSE EQUIVALENT XE-133 is $\leq$ 600 µCi/gram in accordance with the Surveillance Frequency Control Program (SFCP). SR 4.4.8.2 (Salem 1) and SR 4.4.9.2 (Salem 2) will verify DOSE EQUIVALENT I-131 is $\leq$ 1.0 µCi/gram in accordance with the SFCP, and between 2 and 6 hours after a thermal power change of ≥15% within a 1-hour period.

- These surveillance requirements are equivalent to TSTF-490 SR 3.4.16.1 and SR 3.4.16.2. PSEG is proposing that the surveillances be performed in Modes 1 – 4 to ensure consistency with the LCO Applicability. This is contrary to the TSTF-490 requirement of SR 3.4.16.1 only being performed in Mode 1, and is acceptable because it is more conservative than the TSTF, and because Salem's plant configuration supports performing the surveillances in Modes 1 – 4.

  Salem has implemented TSTF-425, Rev. 3 as approved by the NRC through TS Amendments 299 (Unit 1) and 282 (Unit 2) (Reference 7). The initial surveillance frequencies will be consistent with the frequencies in NUREG-1431.

  Current TS Table 4.4-4 Item 4a requires Isotopic Analysis for Iodine to be performed every 4 hours until the specific activity of the primary coolant system is restored to within limits as specified in Footnote # of the Table. Proposed SR 4.4.8.2 (Salem 1) and SR 4.4.9.2 (Salem 2) essentially requires the same analysis; and the actions for sampling described in TS Table 4.4-4 Item 4a are contained in the proposed TS Action 3.4.8.a.1 (Salem 1) and 3.4.9.a.1 (Salem 2) described above in Section 2.7.

  Similarly, current TS Table 4.4-4 Item 4b requires that one sample be taken between 2 and 6 hours following a THERMAL POWER change exceeding 15 percent of the RATED THERMAL POWER within a one hour period. Proposed SR 4.4.8.2 (Salem 1) and SR 4.4.9.2 (Salem 2) requires one sample to be taken in the same time frame after a THERMAL POWER change of greater than or equal to 15% RTP within 1 hour. The proposed change relative to RATED THERMAL POWER is conservative and conforms to the same Surveillance Requirement (SR 3.4.16.2) in NUREG 1431 – Standard Technical Specifications – Westinghouse Plants, Revision 4.0.

PSEG has determined that the relocation of the Frequencies for these Salem plant-specific Surveillances is consistent with TSTF-425, Revision 3, and with the NRC staff's model safety evaluation dated July 6, 2009 (74 FR 31996) (Reference 4), including the scope exclusions identified in Section 1.0, "Introduction," of the model safety evaluation, because the plant-specific Surveillances involve fixed periodic Frequencies. Changes to the Frequencies for these plant-specific Surveillances would be controlled under the SFCP. The SFCP provides the necessary administrative controls to require that Surveillances related to testing, calibration, and inspection are conducted at a frequency to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the Limiting Conditions for Operation will be met.

3.0 BACKGROUND

The background for this application is as stated in the model safety evaluation (SE) in the NRC's Notice of Availability published on March 15, 2007 (Reference 2), the NRC Notice for Comment published on November 20, 2006 (Reference 6), and TSTF-490, Revision 0 (Reference 1).

4.0 TECHNICAL ANALYSIS

PSEG has reviewed References 2 and 6 and has applied the methodology in Reference 2 to develop the proposed TS changes. PSEG has also concluded that the justifications presented in TSTF-490, Revision 0 and the model SE prepared by the NRC staff are applicable to Salem Unit 1 and Unit 2 and justify this amendment for the incorporation of the changes to Salem's TS.

Salem plant-specific differences from TSTF-490 were discussed in section 2.0. In addition, the following plant specific inputs warrant further discussion.

As shown in Attachments 2 and 3, PSEG is proposing that the definition of DOSE EQUIVALENT I-131 be based on the Thyroid Committed Dose Equivalent (CDE) dose conversion factors from Table 2.1 of Federal Guidance Report No. 11. PSEG is proposing to use CDE inhalation dose conversion factors. This is consistent with the dose conversion factors used in Salem's design basis analyses, including the Steam Generator Tube Rupture Accident and the Main Steam Line Break Accident, which were performed using the Alternate Source Term (AST) methodology as approved in Salem 1 Amendment No. 271 and Salem 2 Amendment No. 252 (ADAMS Accession No. ML060040322) (Reference 5).

PSEG performed a calculation to determine the proposed limit for DOSE EQUIVALENT XE-133. Consistent with the dose consequence analysis, the determination of DOSE EQUIVALENT XE-133 is performed using effective dose conversion factors (DCFs) for air submersion listed in Table III.1 of EPA Federal Guidance Report No. 12 (FGR-12) (Reference 8). These conversion factors are shown in column three of Table 4.1 below which displays a summary of the calculation results. To normalize each radioisotope, each FGR-12 effective dose conversion factor is divided by the Xe-133 effective dose conversion factor. The resultant number is each radioisotope's equivalence factor as shown in column four of Table 4.1.

The equivalence factors are then multiplied by the concentrations of noble gases based on 1% failed fuel, as provided in column two of Table 4.1. The nuclide concentrations are assumed to be the total sum of the degassed gamma activities and gaseous gamma activities for each appropriate nuclide. The products for each radionuclide are then summed to come up with the proposed DEX Technical Specification limit. The percent contribution of each radionuclide to the DEX limit is shown in column six of Table 4.1. Note that although Kr-83m is shown in Table 4.1, it is removed from the recommended definition of DEX because it is an insignificant contributor to the calculated DEX value as shown in column six of Table 4.1.

Table 4.1
Determination of DEX Limit

Dose Equivalent XE-133 Specific Activity (µCi/gm)					
Noble Gas Nuclide	**Primary Coolant Specific Act. (µCi/gm) (1% Failed Fuel)**	**FGR 12, Table III.I Effective DCF (SV-m^3 per Bq-sec)**	**Xe-133 Dose Equivalence Factors (Unitless)**	**Xe-133 Equivalent Primary Coolant Specific Act. (µCi/gm) (1% Failed Fuel)**	**% of Dose Equivalent Xe-133 Limit (Unitless)**
Kr-83m	4.00E-01	1.50E-18	9.62E-04	3.85E-04	6.40E-05
Kr-85m	1.70E+00	7.48E-15	4.79E+00	8.15E+00	1.36E+00
Kr-85	8.20E+00	1.19E-16	7.63E-02	6.26E-01	1.04E-01
Kr-87	1.00E+00	4.12E-14	2.64E+01	2.64E+01	4.40E+00
Kr-88	3.00E+00	1.02E-13	6.54E+01	1.96E+02	3.27E+01
Xe-131m	2.10E+00	3.89E-16	2.49E-01	5.24E-01	8.72E-02
Xe-133m	1.70E+01	1.37E-15	8.78E-01	1.49E+01	2.49E+00
Xe-133	2.60E+02	1.56E-15	1.00E+00	2.60E+02	4.33E+01
Xe-135m	4.90E-01	2.04E-14	1.31E+01	6.41E+00	1.07E+00
Xe-135	8.50E+00	1.19E-14	7.63E+00	6.48E+01	1.08E+01
Xe-138	6.10E-01	5.77E-14	3.70E+01	2.26E+01	3.76E+00
TOTAL				6.00E+02	1.00E+02

5.0 REGULATORY ANALYSIS

5.1 Applicable Regulatory Requirements/Criteria

A description of this proposed change and its relationship to applicable regulatory requirements and guidance was provided in the NRC Notice of Availability published on March 15, 2007 (Reference 2), the NRC Notice for Comment published on November 20, 2006 (Reference 6) and TSTF–490, Revision 0 (Reference 1).

5.2 Precedent

PSEG is not proposing significant variations or deviations from the TS changes described in TSTF-490, Revision 0, or in the content of the NRC's model SE published in Reference 2.

The NRC has previously approved similar amendment requests to the TS for R.E. Ginna Nuclear Power Plant (ML16358A424), Palo Verde Nuclear Generating Stations Units 1, 2 and 3 (ML13294A576), Braidwood Station Units 1 and 2 and Byron Stations Units 1 and 2 (ML100590386), Three Mile Island Nuclear Station Unit 1 (ML100320493); and Surry Power Station Units 1 and 2 (ML19028A384). Submittals of these plants to request implementation of TSTF-490 were reviewed, along with corresponding requests for additional information (RAIs). The letters for issuance of amendment were also reviewed to establish the final version of the approved amendment.

5.3 No Significant Hazards Consideration

PSEG has reviewed the proposed no significant hazards consideration determination published in the Federal Register on March 15, 2007 (Reference 2). PSEG has concluded that the proposed determination presented in the notice is applicable to Salem Units 1 and 2, and the full determination evaluation is provided below.

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

   Response: No.
   Reactor coolant specific activity is not an initiator for any accident previously evaluated. The completion time when primary coolant gross activity is not within limit is not an initiator for any accident previously evaluated. The current variable limit on primary coolant iodine concentration is not an initiator to any accident previously evaluated. As a result, the proposed change does not significantly increase the probability of an accident.

   The proposed change will limit primary coolant noble gases to concentrations consistent with the accident analyses. The proposed change to the completion time has no impact on the consequences of any design basis accident since the consequences of an accident during the extended completion time are the same as the consequences of an accident during the current completion time. As a result, the consequences of any accident previously evaluated are not significantly increased.

   Therefore, the proposed change does 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 discussed?

   Response: No.
   The proposed change in specific activity limits does not alter any physical part of the plant nor does it affect any plant operating parameter. The change does not create the potential for a new or different kind of accident from any previously calculated.

   Therefore, the proposed change does 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 revises the limits on noble gas radioactivity in the primary coolant. The proposed change is consistent with the assumptions in the safety analyses and will ensure the monitored values protect the initial assumptions in the safety analyses and will ensure the monitored values protect the initial assumptions in the safety analyses.

Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Based on the above, PSEG 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.

5.4 Conclusions

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 approval of the proposed change will not be inimical to the common defense and security or to the health and safety of the public

6.0 ENVIRONMENTAL CONSIDERATION

PSEG has reviewed the environmental consideration included in the model Safety Evaluation published in the Federal Register on March 15, 2007 (Reference 2). PSEG has concluded that the NRC's findings presented therein are applicable to both Salem Unit 1 and Unit 2 and the determination is hereby incorporated by reference for this application.

7.0 REFERENCES

1. TSTF-490, Revision 0, "Deletion of E Bar Definition and Revision to RCS Specific Activity Tech Spec," dated September 13, 2005, ADAMS Accession No. ML052630462.

2. Federal Register Notice: "Notice of Availability of Model Application Concerning Technical Specification Improvement Regarding Deletion of E Bar Definition and Revision to Reactor Coolant System Specific Activity Technical Specification Using the Consolidated Line Item Improvement Process," published on March 15, 2007 (72 FR 12217).

3. NUREG-1431, Revision 4, "Standard Technical Specifications (STS) – Westinghouse Plants."

4. Federal Register Notice: "Notice of Availability of Technical Specification Improvement To Relocate Surveillance Frequencies to Licensee Control—Risk-Informed Technical Specification Task Force (RITSTF) Initiative 5b, Technical Specification Task Force—425, Revision 3," published on July 6, 2009 (74 FR 31996)

5. Letter from Stewart N. Bailey (NRC) to William Levis (PSEG Nuclear LLC), "Salem Nuclear Generating Station, Unit Nos. 1 and 2, Issuance of Amendments Re: Alternate Source Term," dated February 17, 2006 (ADAMS Accession No. ML060040322).

6. Federal Register Notice: “Notice of Opportunity To Comment on Model Safety Evaluation and Model License Amendment Request on Technical Specification Improvement Regarding Deletion of E Bar Definition and Revision to Reactor Coolant System Specific Activity Technical Specification; Babcock and Wilcox Pressurized Water Reactors, Westinghouse Pressurized Water Reactors, Combustion Engineering Pressurized Water Reactors Using the Consolidated Line Item Improvement Process,” published on November 20, 2006 (71 FR 67170).

7. Letter to Thomas Joyce from NRC, “Salem Nuclear Generating Station, Unit Nos. 1 and 2, Issuance of Amendments RE: Relocation of Specific Surveillance Frequencies to a Licensee-controlled Program Based on Technical Specification Task Force (TSTF) Change TEST-425 (TAC Nos. ME3574 and ME3575), dated March 21, 2011 (ADAMS Accession No. ML110410691).

8. Federal Guidance Report No. 12, “External Exposure to Radionuclides in Air, Water, and Soil,” 1993

Attachment 2

Mark-up of Proposed Technical Specification Pages

The following Technical Specifications pages for Renewed Facility Operating License DPR-70 are affected by this change request:

Technical Specification	Page
INDEX	I
1.10	1-2
1.11	1-3
3/4.4.8	3/4 4-20
Table 4.4-4	3/4 4-22
Figure 3.4-1	3/4 4-23

The following Technical Specifications pages for Renewed Facility Operating License DPR-75 are affected by this change request:

Technical Specification	Page
INDEX	I
1.10	1-2
1.11	1-3
3/4.4.9	3/4 4-23
Table 4.4-4	3/4 4-25
Figure 3.4-1	3/4 4-26

SECTION

PAGE

1.0 DEFINITIONS

DOSE EQUIVALENT XE-133

INSERT-A

1.10 DOSE EQUIVALENT I-131 shall be that concentration of I-131 (microcuries per gram) that alone would produce the same dose when inhaled as the combined activities of iodine isotopes I-131, I-132, I-133, I-134, and I-135 actually present. The determination of DOSE EQUIVALENT I-131 shall be performed using the "Thyroid" Committed Dose Equivalent (CDE) dose conversion factors from Table 2.1 of EPA Federal Guidance Report No. 11, 1988, "Limiting Values of Radionuclide Intake and Air Concentration and Dose Conversion Factors for Inhalation, Submersion, and Ingestion."

INSERT-B

1.11 DOSE EQUIVALENT XE-133 shall be that concentration of Xe-133 (microcuries per gram) that alone would produce the same acute dose to the whole body as the combined activities of noble gas nuclides Kr-85m, Kr-85, Kr-87, Kr-88, Xe-131m, Xe-133m, Xe-133, Xe-135m, Xe-135, and Xe-138 actually present. If a specific noble gas nuclide is not detected, it should be assumed to be present at a minimum detectable activity. The determination of DOSE EQUIVALENT XE-133 shall be performed using effective dose conversion factors for air submersion listed in Table III.1 of EPA Federal Guidance Report No. 12, 1993, "External Exposure to Radionuclides in Air, Water, and Soil."

INSERT-C

NOTE
Specification 3.0.4.c is applicable

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a. With the specific activity of the primary coolant > 1.0 µCi/gram DOSE EQUIVALENT I-131:

   1. Verify DOSE EQUIVALENT I-131 $\leq$ 60 µCi/gram at least once every 4 hours and restore DOSE EQUIVALENT I-131 to $\leq$1.0 µCi/gram within 48 hours, or

   2. Be in HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. With the specific activity of the primary coolant > 600 µCi/gram DOSE EQUIVALENT XE-133:

   1. Restore DOSE EQUIVALENT XE-133 to ≤ 600 µCi/gram within 48 hours, or

   2. Be in HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours.

CONTAINMENT INTEGRITY

1.7 CONTAINMENT INTEGRITY shall exist when:

1.7.1 All penetrations required to be closed during accident conditions are either:

a. Capable of being closed by an OPERABLE containment automatic isolation valve system, or

b. Closed by manual valves, blind flanges, or deactivated automatic valves secured in their closed positions, except for valves that are open under administrative control as permitted by Specification 3.6.3.1.

1.7.2 All equipment hatches are closed and sealed,

1.7.3 Each air lock is OPERABLE pursuant to Specification 3.6.1.3,

1.7.4 The containment leakage rates are within the limits of Specification 3.6.1.2, and

1.7.5 The sealing mechanism associated with each penetration (e.g., welds, bellows or O-rings) is OPERABLE.

CORE ALTERATION

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

CORE OPERATING LIMITS REPORT

1.9 The CORE OPERATING LIMITS REPORT (COLR) is the unit-specific document that provides 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 Specification 6.9.1.9. Unit operation within these operating limits is addressed in individual specifications.

DOSE EQUIVALENT I-131

~~1.10 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 Federal Guidance Report No. 11 (FGR 11), "Limiting Values of Radionuclide Intake and Air Concentration and Dose Conversion Factors for Inhalation, Submersion and Ingestion".~~

Insert-A

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

Replace with Insert-B

~~1.11 $\bar{E}$ 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, other than iodines, with half-lives greater than 15 minutes, making up at least 95% of the total non iodine activity in the coolant.~~

ENGINEERED SAFETY FEATURE RESPONSE TIME

1.12 The ENGINEERED SAFETY FEATURE RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its ESF actuation setpoint at the channel sensor until the ESF 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.

FREQUENCY NOTATION

1.13 The FREQUENCY NOTATION specified for the performance of Surveillance Requirements shall correspond to the intervals defined in Table 1.2.

FULLY WITHDRAWN

1.13a FULLY WITHDRAWN shall be the condition where control and/or shutdown banks are at a position which is within the interval of 222 to 230 steps withdrawn, inclusive. FULLY WITHDRAWN will be specified in the current reload analysis.

GASEOUS RADWASTE TREATMENT SYSTEM

1.14 A GASEOUS RADWASTE TREATMENT SYSTEM is any system designed and installed to reduce radioactive gaseous effluents by collecting primary coolant system offgases from the primary system and providing for delay or holdup for the purpose of reducing the total radioactivity prior to release to the environment.

IDENTIFIED LEAKAGE

1.15 IDENTIFIED LEAKAGE shall be:

a. Leakage (except Reactor Coolant Pump Seal Water Injection) into closed systems, such as pump seal or valve packing leaks that are captured and conducted to a sump or collecting tank, or

REACTOR COOLANT SYSTEM

SPECIFIC ACTIVITY

LIMITING CONDITION FOR OPERATION

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

a. ≤ 1.0 µCi/gram DOSE EQUIVALENT I-131, and

b. ≤ ~~100/Ē µCi/gram~~. 600 µCi/gm DOSE EQUIVALENT XE-133

APPLICABILITY: MODES 1, 2, 3, 4 ~~and 5~~

and

ACTION:

Replace with Insert-C

~~MODES 1, 2 and 3*~~

~~a. With the specific activity of the primary coolant > 1.0 µCi/gram DOSE EQUIVALENT I-131 for more than 48 hours during one continuous time interval or exceeding the limit line shown on Figure 3.4-1, be in at least HOT STANDBY with T_{avg} < 500°F within 6 hours.~~

~~b. With the specific activity of the primary coolant > 100/Ē µCi/gram, be in at least HOT STANDBY with T_{avg} < 500°F within 6 hours.~~

~~c. LCO 3.0.4.c is applicable.~~

~~MODES 1, 2, 3, 4 and 5~~

~~a. With the specific activity of the primary coolant > 1.0 µCi/gram DOSE EQUIVALENT I-131 or > 100/Ē µCi/gram, perform the sampling and analysis requirements of item 4a of Table 4.4-4 until the specific activity of the primary coolant is restored to within its limits.~~

SURVEILLANCE REQUIREMENTS

~~4.4.8 The specific activity of the primary coolant shall be determined to be within the limits by performance of the sampling and analysis program of Table 4.4-4.~~

4.4.8.1 Verify the specific activity of the primary coolant ≤600 µCi/gm DOSE EQUIVALENT XE-133 in accordance with the Surveillance Frequency Control Program.

.

4.4.8.2 Verify the specific activity of the primary coolant ≤1.0 µCi/gm DOSE EQUIVALENT I-131 in accordance with the Surveillance Frequency Control Program, and between 2 and 6 hours after a THERMAL POWER change of ≥15% RATED THERMAL POWER within a one hour period.

~~*With T_{avg} ≥ 500°F.~~

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TABLE 4.4-4

PRIMARY COOLANT SPECIFIC ACTIVITY SAMPLE AND ANALYSIS PROGRAM

TYPE OF MEASUREMENT AND ANALYSIS	SAMPLE AND ANALYSIS FREQUENCY	MODES IN WHICH SAMPLE AND ANALYSIS REQUIRED
1. Gross Activity Determination	In accordance with the Surveillance Frequency Control Program	1, 2, 3, 4
2. Isotopic Analysis for DOSE EQUIVALENT I-131 Concentration	In accordance with the Surveillance Frequency Control Program	1
3. Radiochemical for $\bar{E}$ Determination	In accordance with the Surveillance Frequency Control Program*	1
4. Isotopic Analysis for Iodine Including I-131, I-133, and I-135	a) Once per 4 hours, whenever the specific activity exceeds 1.0 µCi/gram DOSE EQUIVALENT I-131 or 100/$\bar{E}$ µCi/gram, and	1#, 2#, 3#, 4#, 5#
	b) One sample between 2 & 6 hours following a THERMAL POWER change exceeding 15 percent of the RATED THERMAL POWER within a one hour period.	1, 2, 3

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

* 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.

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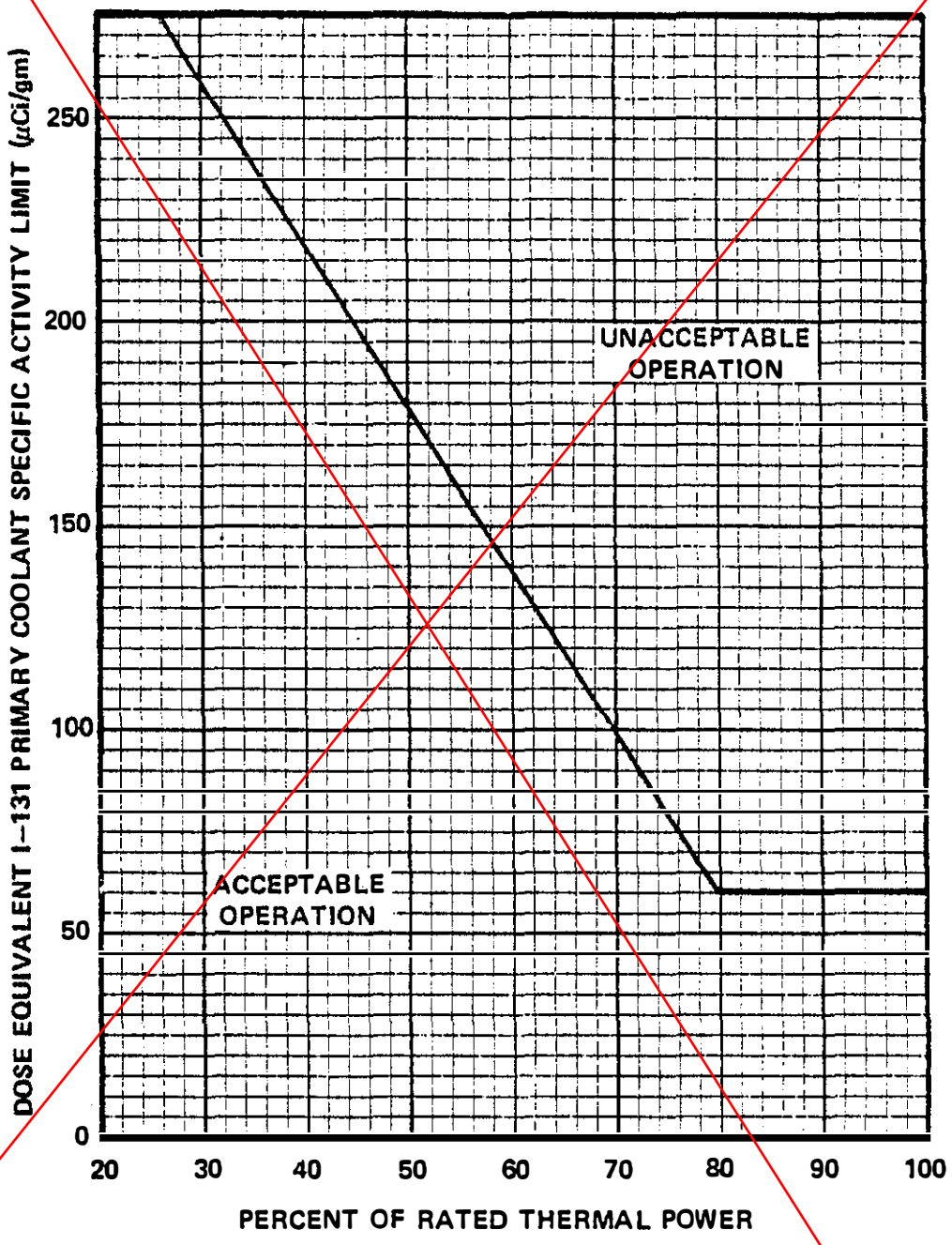

FIGURE 3.4-1

DOSE EQUIVALENT I—131 Primary Coolant Specific Activity Limit Versus Percent of RATED THERMAL POWER with the Primary Coolant Specific Activity > 1.0 μCi/gram Dose Equivalent I-131

SECTION PAGE

1.0 DEFINITIONS

DOSE EQUIVALENT XE-133

CONTAINMENT INTEGRITY

1.7 CONTAINMENT INTEGRITY shall exist when:

1.7.1 All penetrations required to be closed during accident conditions are either:

a. Capable of being closed by an OPERABLE containment automatic isolation valve system, or

b. Closed by manual valves, blind flanges, or deactivated automatic valves secured in their closed positions, except for valves that are opened under administrative control as permitted by Specification 3.6.3.

1.7.2 All equipment hatches are closed and sealed,

1.7.3 Each air lock is OPERABLE pursuant to Specification 3.6.1.3,

1.7.4 The containment leakage rates are within the limits of Specification 3.6.1.2, and

1.7.5 The sealing mechanism associated with each penetration (e.g., welds, bellows or 0-rings) is OPERABLE.

CORE ALTERATION

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

CORE OPERATING LIMITS REPORT

1.9 The CORE OPERATING LIMITS REPORT (COLR) is the unit-specific document that provides 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 Specification 6.9.1.9. Unit operation within these operating limits is addressed in individual specifications.

DOSE EQUIVALENT I-131

1.10 ~~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 Federal Guidance Report No. 11 (FGR 11), "Limiting Values of Radionuclide Intake and Air Concentration and Dose Conversion Factors for Inhalation, Submersion and Ingestion".~~

Insert-A

Replace with Insert-B

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

~~1.11 $\bar{E}$ 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, other than iodines, with half-lives greater than 15 minutes, making up at least 95% of the total non-iodine activity in the coolant.~~

ENGINEERED SAFETY FEATURE RESPONSE TIME

1.12 The ENGINEERED SAFETY FEATURE RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its ESF actuation setpoint at the channel sensor until the ESF 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.

FREQUENCY NOTATION

1.13 The FREQUENCY NOTATION specified for the performance of Surveillance Requirements shall correspond to the intervals defined in Table 1.2.

FULLY WITHDRAWN

1.13a FULLY WITHDRAWN shall be the condition where control and/or shutdown banks are at a position which is within the interval of 222 to 230 steps withdrawn, inclusive. FULLY WITHDRAWN will be specified in the current reload analysis.

GASEOUS RADWASTE TREATMENT SYSTEM

1.14 A GASEOUS RADWASTE TREATMENT SYSTEM is any system designed and installed to reduce radioactive gaseous effluents by collecting primary coolant system offgases from the primary system and providing for delay or holdup for the purpose of reducing the total radioactivity prior to release to the environment.

IDENTIFIED LEAKAGE

1.15 IDENTIFIED LEAKAGE shall be:

a. Leakage (except Reactor Coolant Pump Seal Water Injection) into closed systems, such as pump seal or valve packing leaks that are captured and conducted to a sump or collecting tank, or

REACTOR COOLANT SYSTEM

3/4.4.9 SPECIFIC ACTIVITY

LIMITING CONDITION FOR OPERATION

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

a. ≤ 1.0 µCi/gram DOSE EQUIVALENT I-131, and

b. ≤ ~~100/Ē µCi/gram.~~ 600 µCi/gram DOSE EQUIVALENT XE-133

APPLICABILITY: MODES 1, 2, 3, ~~and~~ 4 ~~and 5.~~

and

ACTION:

~~MODES 1, 2 and 3*~~

Replace with Insert-C

~~a. With the specific activity of the primary coolant > 1.0 µCi/gram DOSE EQUIVALENT I-131 for more than 48 hours during one continuous time interval or exceeding the limit line shown on Figure 3.4-1, be in at least HOT STANDBY with T_{avg} < 500°F within 6 hours.~~

~~b. With the specific activity of the primary coolant > 100/Ē µCi/gram, be in at least HOT STANDBY with T_{avg} < 500°F within 6 hours.~~

~~c. LCO 3.0.4.c is applicable.~~

~~MODES 1, 2, 3, 4 and 5~~

~~a. With the specific activity of the primary coolant > 1.0 µCi/gram DOSE EQUIVALENT I-131 or > 100/Ē µCi/gram, perform the sampling and analysis requirements of item 4a of Table 4.4-4 until the specific activity of the primary coolant is restored to within its limits.~~

SURVEILLANCE REQUIREMENTS

~~4.4.9 The specific activity of the primary coolant shall be determined to be within the limits by performance of the sampling and analysis program of Table 4.4-4.~~

4.4.9.1 Verify the specific activity of the primary coolant ≤600µCi/gm DOSE EQUIVALENT XE-133 in accordance with the Surveillance Frequency Control Program.

4.4.9.2 Verify the specific activity of the primary coolant ≤1.0 µCi/gm DOSE EQUIVALENT I-131 in accordance with the Surveillance Frequency Control Program, and between 2 and 6 hours after a THERMAL POWER change of ≥15% RATED THERMAL POWER within a one hour period.

~~*With T_{avg} ≥ 500°F.~~

TABLE 4.4-4

PRIMARY COOLANT SPECIFIC ACTIVITY SAMPLE AND ANALYSIS PROGRAM

TYPE OF MEASUREMENT AND ANALYSIS	SAMPLE AND ANALYSIS FREQUENCY	MODES IN WHICH SAMPLE AND ANALYSIS REQUIRED
1. Gross Activity Determination	In accordance with the Surveillance Frequency Control Program	1, 2, 3, 4
2. Isotopic Analysis for DOSE EQUIVALENT I-131 Concentration	In accordance with the Surveillance Frequency Control Program	1
3. Radiochemical for $\bar{E}$ Determination	In accordance with the Surveillance Frequency Control Program*	1
4. Isotopic Analysis for Iodine Including I-131, I-133, and I-135	a) Once per 4 hours, whenever the specific activity exceeds 1.0 µCi/gram DOSE EQUIVALENT I-131 or 100/$\bar{E}$ µCi/gram, and	1#, 2#, 3#, 4#, 5#
	b) One sample between 2 and 6 hours following a THERMAL POWER change exceeding 15 percent of the RATED THERMAL POWER within a one hour period.	1, 2, 3

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

* 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.

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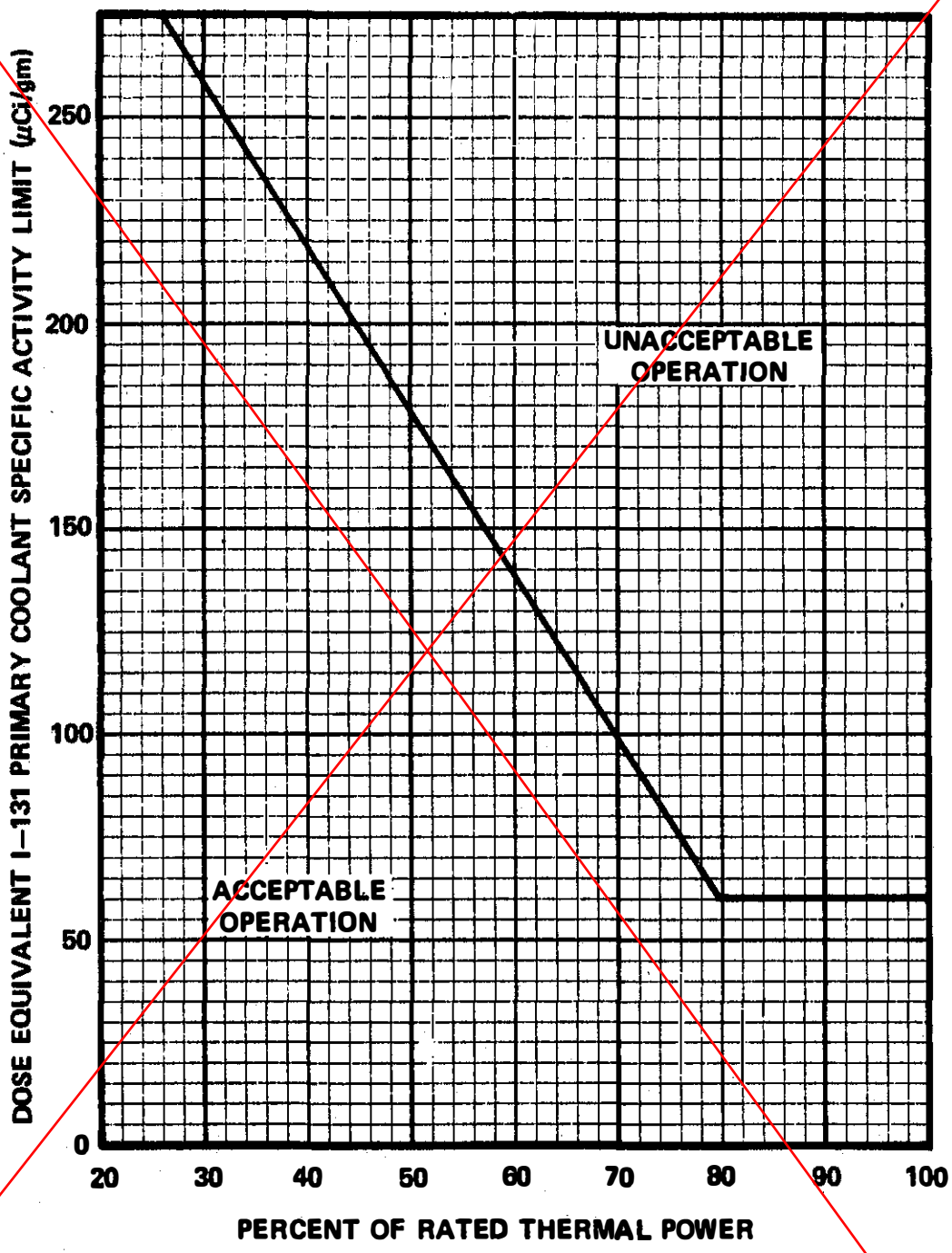

FIGURE 3.4-1

DOSE EQUIVALENT I–131 Primary Coolant Specific Activity Limit Versus Percent of RATED THERMAL POWER with the Primary Coolant Specific Activity > 1.0 μCi/gram Dose Equivalent I-131

Attachment 3

Mark-up of Proposed Technical Specification Bases Pages for Information

The following Technical Specifications Bases pages for Renewed Facility Operating License DPR-70 are affected by this change request:

Technical Specification Bases	Page
3/4.4.8	B 3/4 4-5

The following Technical Specifications pages for Renewed Facility Operating License DPR-75 are affected by this change request:

Technical Specification Bases	Page
3/4.4.9	B 3/4 4-6

3/4.4.6.3 REACTOR COOLANT SYSTEM (RCS) PRESSURE ISOLATION VALVES (PIV)

The function of the RCS PIVs is to separate the high pressure RCS from the attached low pressure systems. The PIV leakage limit applies to each individual valve listed in the Technical Requirements Manual. Leakage through both series PIVs in a line must be included as part of the IDENTIFIED LEAKAGE, governed by LCO 3.4.6.2, "Operational Leakage." This is true during operation only when the loss of RCS mass through two series valves is determined by a water inventory balance (SR 4.4.6.2.d). A known component of the IDENTIFIED LEAKAGE before operation begins is the least of the two individual leak rates determined for leaking series PIVs during the required surveillance testing; leakage measured through one PIV in a line is not RCS operational leakage if the other is leaktight.

Although this specification provides a limit on allowable PIV leakage rate, its main purpose is to prevent overpressure failure of the low pressure portions of connecting systems. The leakage limit is an indication that the PIVs between the RCS and the connecting systems are degraded or degrading. PIV leakage could lead to overpressure of the low pressure piping or components. Failure consequences could be a loss of coolant accident (LOCA) outside of containment, an unanalyzed accident, that could degrade the ability for low pressure injection.

3/4.4.7

THIS SECTION DELETED

3/4.4.8 SPECIFIC ACTIVITY

Replace with Insert D

~~The limitations on the specific activity of the primary coolant ensure that the resulting 2 hour doses at the site boundary will not exceed an appropriately small fraction of Part 100 limits following a steam generator tube rupture accident in conjunction with an assumed steady state primary-to-secondary steam generator leakage rate of 1.0 GPM. 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 of the Salem site, such as site boundary location and meteorological conditions, were not considered in this evaluation. The NRC is finalizing site specific criteria which will be used as the basis for the reevaluation of the specific activity limits of this site. This reevaluation may result in higher limits.~~

~~Reducing T_{avg} to <500°F prevents the release of activity should a steam generator tube rupture occur since the saturation pressure of the primary coolant is below the lift pressure of the atmospheric steam relief valves. The surveillance requirements provide adequate assurance that excessive specific activity levels in the primary coolant will be detected in sufficient time to take corrective action. Information obtained on iodine spiking will be used to assess the parameters associated with spiking phenomena. A reduction in frequency of isotopic analyses following power changes may be permissible if justified by the data obtained.~~

~~LCO 3.0.4.c is applicable. This allowance permits entry into the applicable MODE(S) while relying on the ACTIONS~~.

INSERT-D

In MODES 1, 2, 3, and 4, operation within the LCO limits for DOSE EQUIVALENT I-131 and DOSE EQUIVALENT XE-133 is necessary to limit the potential consequences of a steam line break (SLB) or steam generator tube rupture (SGTR) to within the acceptance criteria. The iodine specific activity in the reactor coolant is limited to 1.0 µCi/gm DOSE EQUIVALENT I-131, and the noble gas specific activity in the reactor coolant is limited to 600 µCi/gm DOSE EQUIVALENT XE-133. The limits on specific activity ensure that offsite and control room doses will meet the appropriate acceptance criteria. The SLB and SGTR accident analyses show that the calculated doses are within acceptable limits. Violation of the LCO may result in reactor coolant radioactivity levels that could, in the event of a SLB or SGTR, lead to doses that exceed the acceptance criteria.

With the DOSE EQUIVALENT I-131 greater than the LCO limit, samples at intervals of 4 hours must be taken to demonstrate that the specific activity is $\leq$ 60.0 µCi/gm. The Completion Time of 4 hours is required to obtain and analyze a sample. Sampling is continued every 4 hours to provide a trend. The DOSE EQUIVALENT I-131 must be restored to within limit within 48 hours. The Completion Time of 48 hours is acceptable since it is expected that, if there were an iodine spike, the normal coolant iodine concentration would be restored within this time period. Also, there is a low probability of a SLB or SGTR occurring during this time period.

With the DOSE EQUIVALENT XE-133 greater than the LCO limit, DOSE EQUIVALENT XE-133 must be restored to within limit within 48 hours. The allowed Completion Time of 48 hours is acceptable since it is expected that, if there were a noble gas spike, the normal coolant noble gas concentration would be restored within this time period. Also, there is a low probability of a SLB or SGTR occurring during this time period.

A Note provided for both specific activities permits the use of the provisions of Technical Specification 3.0.4.c. This allowance permits entry into the applicable MODE(S), relying on Actions 3.4.8.a while the DOSE EQUIVALENT I-131 LCO limit is not met and Action 3.4.8.b while the DOSE EQUIVALENT XE-133 is not met. This allowance is acceptable due to the significant conservatism incorporated into the specific activity limit, the low probability of an event which is limiting due to exceeding this limit, and the ability to restore transient-specific activity excursions while the plant remains at, or proceeds to, power operation.

If the Action and associated completion time of LCO 3.4.8.a.1 is not met or if the DOSE EQUIVALENT I-131 is > 60 µCi/gm, the reactor must be brought to HOT STANDBY within 6 hours and COLD SHUTDOWN within the next 30 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

If the Action and the associated completion time of LCO 3.4.8.b is not met the reactor must be brought to HOT STANDBY within 6 hours and COLD SHUTDOWN within the next 30 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

Surveillance Requirement 4.4.8.1 requires performing a gamma isotopic analysis as a measure of the noble gas specific activity of the reactor coolant in accordance with the Surveillance Frequency Control Program (SFCP). This measurement is the sum of the degassed gamma activities and the gaseous gamma activities in the sample taken. This Surveillance provides an indication of any increase in the noble gas specific activity. Trending the results of this Surveillance allows proper remedial action to be taken before reaching the LCO limit under normal operating conditions. The Frequency within the SFCP considers the low probability of a gross fuel failure during this time. Due to the inherent difficulty in detecting Kr-85 in a reactor coolant sample due to masking from radioisotopes with similar decay energies, such as F-18 and I-134, it is acceptable to include the minimum detectable activity for Kr-85 in the Surveillance calculation. If a specific noble gas nuclide listed in the definition of DOSE EQUIVALENT XE-133 is not detected, it should be assumed to be present at the minimum detectable activity.

Surveillance Requirement 4.4.8.2 is performed to ensure iodine specific activity remains within the LCO limit during normal operation and following fast power changes when iodine spiking is more apt to occur. The Frequency identified in the SFCP is adequate to trend changes in the iodine activity level, considering noble gas activity is routinely monitored. The Frequency, between 2 and 6 hours after a power change $\geq$ 15% RTP within a 1 hour period, is established because the iodine levels peak during this time following iodine spike initiation; samples at other times would provide inaccurate results.

3/4.4.9 SPECIFIC ACTIVITY

Replace with Insert-E

The limitations on the specific activity of the primary coolant ensure that the resulting 2 hour doses at the site boundary will not exceed an appropriately small fraction of Part 100 limits following a steam generator tube rupture accident in conjunction with an assumed steady state primary-to-secondary steam generator leakage rate of 1.0 GPM. 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 of the Salem site, such as site boundary location and meteorological conditions, were not considered in this evaluation. The NRC is finalizing site specific criteria which will be used as the basis for the reevaluation of the specific activity limits of this site. This reevaluation may result in higher limits.

Reducing T_{avg} to less than 500°F prevents the release of activity should a steam generator tube rupture occur since the saturation pressure of the primary coolant is below the lift pressure of the atmospheric steam relief valves. The surveillance requirements provide adequate assurance that excessive specific activity levels in the primary coolant will be detected in sufficient time to take corrective action. Information obtained on iodine spiking will be used to assess the parameters associated with spiking phenomena. A reduction in frequency of isotopic analyses following power changes may be permissible if justified by the data obtained.

LCO 3.0.4.c is applicable. This allowance permits entry into the applicable MODE(S) while relying on the ACTIONS.

INSERT-E

In MODES 1, 2, 3, and 4, operation within the LCO limits for DOSE EQUIVALENT I-131 and DOSE EQUIVALENT XE-133 is necessary to limit the potential consequences of a steam line break (SLB) or steam generator tube rupture (SGTR) to within the acceptance criteria. The iodine specific activity in the reactor coolant is limited to 1.0 µCi/gm DOSE EQUIVALENT I-131, and the noble gas specific activity in the reactor coolant is limited to 600- µCi/gm DOSE EQUIVALENT XE-133. The limits on specific activity ensure that offsite and control room doses will meet the appropriate acceptance criteria. The SLB and SGTR accident analyses show that the calculated doses are within acceptable limits. Violation of the LCO may result in reactor coolant radioactivity levels that could, in the event of a SLB or SGTR, lead to doses that exceed the acceptance criteria.

With the DOSE EQUIVALENT I-131 greater than the LCO limit, samples at intervals of 4 hours must be taken to demonstrate that the specific activity is $\leq$ 60.0 µCi/gm. The Completion Time of 4 hours is required to obtain and analyze a sample. Sampling is continued every 4 hours to provide a trend. The DOSE EQUIVALENT I-131 must be restored to within limit within 48 hours. The Completion Time of 48 hours is acceptable since it is expected that, if there were an iodine spike, the normal coolant iodine concentration would be restored within this time period. Also, there is a low probability of a SLB or SGTR occurring during this time period.

With the DOSE EQUIVALENT XE-133 greater than the LCO limit, DOSE EQUIVALENT XE-133 must be restored to within limit within 48 hours. The allowed Completion Time of 48 hours is acceptable since it is expected that, if there were a noble gas spike, the normal coolant noble gas concentration would be restored within this time period. Also, there is a low probability of a SLB or SGTR occurring during this time period.

A Note provided for both specific activities permits the use of the provisions of Technical Specification 3.0.4.c. This allowance permits entry into the applicable MODE(S), relying on Actions 3.4.9.a while the DOSE EQUIVALENT I-131 LCO limit is not met and Action 3.4.9.b while the DOSE EQUIVALENT XE-133 is not met. This allowance is acceptable due to the significant conservatism incorporated into the specific activity limit, the low probability of an event which is limiting due to exceeding this limit, and the ability to restore transient-specific activity excursions while the plant remains at, or proceeds to, power operation.

If the Action and associated completion time of LCO 3.4.9.a.1 is not met or if the DOSE EQUIVALENT I-131 is > 60 µCi/gm, the reactor must be brought to HOT STANDBY within 6 hours and COLD SHUTDOWN within the next 30 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

If the Action and the associated completion time of LCO 3.4.9.b is not met the reactor must be brought to HOT STANDBY within 6 hours and COLD SHUTDOWN within the next 30 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

Surveillance Requirement 4.4.9.1 requires performing a gamma isotopic analysis as a measure of the noble gas specific activity of the reactor coolant in accordance with the Surveillance Frequency Control Program (SFCP). This measurement is the sum of the degassed gamma activities and the gaseous gamma activities in the sample taken. This Surveillance provides an indication of any increase in the noble gas specific activity. Trending the results of this Surveillance allows proper remedial action to be taken before reaching the LCO limit under normal operating conditions. The Frequency within the SFCP considers the low probability of a gross fuel failure during this time. Due to the inherent difficulty in detecting Kr-85 in a reactor coolant sample due to masking from radioisotopes with similar decay energies, such as F-18 and I-134, it is acceptable to include the minimum detectable activity for Kr-85 in the Surveillance calculation. If a specific noble gas nuclide listed in the definition of DOSE EQUIVALENT XE-133 is not detected, it should be assumed to be present at the minimum detectable activity.

Surveillance Requirement 4.4.9.2 is performed to ensure iodine specific activity remains within the LCO limit during normal operation and following fast power changes when iodine spiking is more apt to occur. The Frequency identified in the SFCP is adequate to trend changes in the iodine activity level, considering noble gas activity is routinely monitored. The Frequency, between 2 and 6 hours after a power change $\geq$ 15% RTP within a 1 hour period, is established because the iodine levels peak during this time following iodine spike initiation; samples at other times would provide inaccurate results.