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PG&E Letter DCL-06-008

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

Docket No. 50-275, OL-DPR-80
Docket No. 50-323, OL-DPR-82
Diablo Canyon Units 1 and 2
License Amendment Request 06-01
Revision to Technical Specification 1.1, "Definitions," and Technical Specification 3.4.16, "RCS Specific Activity"

Dear Commissioners and Staff:

In accordance with 10 CFR 50.90, enclosed is an application for amendment to Facility Operating License Nos. DPR-80 and DPR-82 for Units 1 and 2 of the Diablo Canyon Power Plant (DCPP) respectively. The enclosed license amendment request (LAR) proposes to revise Technical Specification (TS) 1.1, "Definitions," and TS 3.4.16, "RCS Specific Activity."

The LAR proposes to replace the current TS 3.4.16 limit on reactor coolant system (RCS) gross specific activity with a new limit on RCS noble gas specific activity. The noble gas specific activity limit would be based on a new DOSE EQUIVALENT XE-133 definition (corresponding to the Xenon-133 isotope) that would replace the current $\bar{E}$ - AVERAGE DISINTEGRATION ENERGY definition. In addition, the current DOSE EQUIVALENT I-131 definition (corresponding to the Iodine-131 isotope) would be revised to allow the use of alternate, NRC-approved thyroid dose conversion factors.

This change is being proposed in order to implement an RCS specific activity Limiting Condition for Operation (LCO) that reflects the whole body radiological consequence analysis assumptions. Those assumptions are sensitive to the noble gas activity in the primary coolant, but not to the other, nongaseous activity currently captured in the current $\bar{E}$ definition. The current $\bar{E}$ definition includes radioisotopes that decay by the emission of both gamma and beta radiation. Current Condition B of LCO 3.4.16 would rarely, if ever, be entered for exceeding 100/$\bar{E}$ since that value is very high (the denominator is very low) if beta emitters such as tritium and Fluorine-18 are included in that value, as required by the $\bar{E}$ definition.

A001

Pacific Gas and Electric Company (PG&E) is submitting this LAR in conjunction with an industry consortium of six plants as a result of a mutual agreement known as Strategic Teaming and Resource Sharing (STARS). The STARS group consists of the six plants operated by TXU Power, AmerenUE, Wolf Creek Nuclear Operating Corporation, PG&E, STP Nuclear Operating Company, and Arizona Public Service Company.

PG&E's DCPP is the lead STARS plant for this amendment request. Wolf Creek Nuclear Operating Corporation submitted a similar amendment request on October 28, 2005. Other members of the STARS group can also be expected to submit an LAR similar to this one. The other LARs will be submitted with plant-specific information presented within brackets (i.e., within [ ]) in Enclosure 1 (other than TS LCO numbers which vary between the TS based on NUREG-0452, NUREG-1431, and NUREG-1432). All other enclosures are plant-specific in nature.

The TS developed for the Westinghouse AP600 and AP1000 advanced reactor designs utilize an LCO for RCS DOSE EQUIVALENT XE-133 specific activity in place of the LCO on gross specific activity based on $\bar{E}$. This approach was approved by the NRC for the AP600 in NUREG-1512, "Final Safety Evaluation Report Related to the Certification of the AP600 Standard Design, Docket No. 52-003," dated August 1998, and for the AP1000 in the NRC letter to Westinghouse Electric Company dated September 13, 2004.

Enclosure 1 contains a description of the proposed change, the supporting technical analyses, and the no significant hazards consideration determination. Enclosures 2 and 3 contain marked-up and retyped (clean) TS pages, respectively. Enclosure 4 provides the marked-up TS Bases changes for information only. TS Bases changes will be implemented pursuant to TS 5.5.14, "Technical Specifications Bases Control Program," at the time this amendment is implemented. Enclosure 5 provides the marked-up Final Safety Analysis Report Update changes for information only. A revision to the fuel damage Emergency Plan Emergency Action Level that reflects the approved TS 3.4.16 limits will be implemented at the time the amendment is implemented.

PG&E has determined that this LAR does not involve a significant hazard consideration as determined per 10 CFR 50.92. Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment needs to be prepared in connection with the issuance of this amendment.

The change in this LAR is not required to address an immediate safety concern. PG&E requests approval of this LAR no later than January 1, 2007. PG&E requests

the license amendment(s) be made effective upon NRC issuance, to be implemented within 90 days from the date of issuance.

This communication contains no new or revised commitments.

If you have any questions or require additional information, please contact Stan Ketelsen at 805-545-4720.

Sincerely,

David H. Oatley
Vice President and General Manager

kjse/4328
Enclosures
cc: Edgar Bailey, DHS
Terry W. Jackson
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cc/enc: Alan B. Wang

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of PACIFIC GAS AND ELECTRIC COMPANY	)	Docket No. 50-275 Facility Operating License No. DPR-80
Diablo Canyon Power Plant Units 1 and 2	)	Docket No. 50-323 Facility Operating License No. DPR-82

AFFIDAVIT

David H. Oatley, of lawful age, first being duly sworn upon oath says that he is Vice President and General Manager of Pacific Gas and Electric Company; that he has executed license amendment request 06-01 on behalf of said company with full power and authority to do so; that he is familiar with the content thereof; and that the facts stated therein are true and correct to the best of his knowledge, information, and belief.

David H. Oatley
Vice President and General Manager

Subscribed and sworn to before me this 25th day of January, 2006, by David H. Oatley, personally known to me or proved to me on the basis of satisfactory evidence to be the person who appeared before me.

Notary Public
County of San Luis Obispo
State of California

CHUCK MACKEY
Commission # 1397547
Notary Public - California
San Luis Obispo County
My Comm. Expires Feb 1, 2007

EVALUATION

1.0 DESCRIPTION

This letter is a request to amend Operating Licenses DPR-80 and DPR-82 for Units 1 and 2 of the Diablo Canyon Power Plant (DCPP), respectively.

The proposed amendment would revise Technical Specification (TS) 1.1, "Definitions," and TS 3.4.16, "RCS Specific Activity." The proposed changes would replace the current TS limits on reactor coolant system (RCS) gross specific activity with a new limit on RCS noble gas specific activity. The noble gas specific activity limit would be based on a new TS DOSE EQUIVALENT XE-133 (DEX) definition that would replace the current TS $\bar{E}$ - AVERAGE DISINTEGRATION ENERGY definition. In addition, the current DOSE EQUIVALENT I-131 (DEI) definition would be revised to allow alternate, NRC-approved thyroid dose conversion factors.

2.0 PROPOSED CHANGE

The TS Section 1.1 definition for DEI would be revised from:

> "DOSE EQUIVALENT I-131 shall be that concentration of I-131 (microcuries/gram) that 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, AEC, 1962, "Calculation of Distance Factors for Power and Test Reactor Sites," or those listed in Table E-7 of NRC Regulatory Guide 1.109, Rev. 1, October, 1977, or those listed in International Commission on Radiological Protection Publication 30, "Limits for Intakes of Radionuclides by Workers," 1979.]"

to

> "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 thyroid dose conversion factors from [Table III of TID-14844, AEC, 1962, "Calculation of Distance Factors for Power and Test Reactor Sites," or Table E-7 of Regulatory Guide 1.109, Revision 1, NRC, 1977, or International Commission on Radiological Protection (ICRP) Publication 30, 1979, Supplement to Part 1, pages 192-212, Table titled "Committed Dose Equivalent in Target Organs or Tissues per Intake of Unit Activity," or 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."]"

The TS Section 1.1 definition for $\bar{E}$ - AVERAGE DISINTEGRATION ENERGY would be deleted and replaced with a new definition for DEX, which states:

"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-87, Kr-88, 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 the 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."]"

TS Limiting Condition for Operation (LCO) 3.4.16, "RCS Specific Activity," would be revised from:

"The specific activity of the reactor coolant shall be within limits."

to

"RCS DOSE EQUIVALENT I-131 and DOSE EQUIVALENT XE-133 specific activity shall be within limits."

The current TS Figure 3.4.16-1, "Dose Equivalent I-131 Reactor Coolant Specific Activity Limit Versus Percent of Rated Thermal Power with the Reactor Coolant Specific Activity > 1 µCi/gram Dose Equivalent I-131" would be deleted.

The Applicability of TS 3.4.16 would be revised from:

"MODES 1 and 2, MODE 3 with RCS average temperature (T_{avg}) ≥ 500°F."

to

"MODES 1, 2, 3, and 4."

TS 3.4.16 Condition A would be revised from:

"DOSE EQUIVALENT I-131 specific activity > 1.0 µCi/gm."

to

"DOSE EQUIVALENT I-131 not within limit."

TS 3.4.16 Required Action A.1 would be revised from:

"Verify DOSE EQUIVALENT I-131 specific activity within the acceptable region of Figure 3.4.16-1."

to

"Verify DOSE EQUIVALENT I-131 ≤ 60 µCi/gm."

[TS 3.4.16 Required Action A.2 would be revised from:

"Restore DOSE EQUIVALENT I-131 specific activity to within limit."

to

"Restore DOSE EQUIVALENT I-131 to within limit."]

TS 3.4.16 Condition B would be revised from:

"Gross specific activity of the reactor coolant 100/$\bar{E}$ µCi/gm."

to

"DOSE EQUIVALENT XE-133 not within limit."

TS 3.4.16 Required Action B.1 would be revised from:

"Be in MODE 3 with T_{avg} to < 500°F."

to

"----------NOTE----------
LCO 3.0.4c is applicable.

Restore DOSE EQUIVALENT XE-133 to within limit."

TS 3.4.16 Required Action B.1 completion time would be revised from "6 hours" to "48 hours."

TS 3.4.16 Condition C would be revised from:

"Required Action and associated Completion Time of Condition A not met. OR DOSE EQUIVALENT I-131 specific activity in the unacceptable region of Figure 3.4.16-1."

to

"Required Action and associated Completion Time of Condition A or B not met. OR DOSE EQUIVALENT I-131 > 60 µCi/gm."

TS 3.4.16 required action(s) for Condition C would be revised from:

"C.1 Be in MODE 3 with T_{avg} to < 500°F."

to

"C.1 Be in MODE 3.

AND

C.2 Be in MODE 5."

TS 3.4.16 Condition C would be revised to add a completion time for new Required Action C.2 of "36 hours." Note: The completion time for Required Action C.1 would remain 6 hours.

Surveillance Requirement (SR) 3.4.16.1 would be revised from:

"Verify reactor coolant gross specific activity ≤100/$\bar{E}$ µCi/gm."

to

"----------NOTE----------
Only required to be performed in MODE 1.

Verify reactor coolant DOSE EQUIVALENT XE-133 specific activity ≤ [600.0] µCi/gm."

Current SR 3.4.16.3 would be deleted.

In summary, the proposed changes will revise the definition of DEI, delete the definition of $\bar{E}$ - AVERAGE DISINTEGRATION ENERGY, add a new definition for DEX, revise TS 3.4.16 to specify an LCO limit on DEI, add a new LCO 3.4.16 limit for DEX, increase the completion time of Required Action B.1, delete TS Figure 3.4.16-1, and revise the conditions and required actions accordingly. Also, the applicability of LCO 3.4.16 is extended to reflect the modes during

which pertinent accidents (steam generator tube rupture (SGTR) or main steam line break (MSLB)) could be postulated to occur, SR 3.4.16.1 is revised to verify DEX prior to MODE 1 entry, and SR 3.4.16.3 is deleted.

The TS Bases for LCO 3.4.16 would be revised to reflect the proposed changes and to incorporate the bases for the proposed changes. The TS Bases changes are included for information only.

The proposed TS change is noted on the marked-up TS pages provided in Enclosure 2. The proposed retyped TS pages are provided in Enclosure 3. The revised TS Bases is contained for information only in Enclosure 4. Enclosure 5 provides the marked-up Final Safety Analysis Report (FSAR) Update changes for information only.

3.0 BACKGROUND

3.1 Radiological consequence analyses

Radiological consequence analyses are performed for the SGTR accident and for the MSLB accident since these events involve the release of primary coolant activity. For events that also result in fuel damage (such as locked rotor, rod ejection, and loss-of-coolant accident) as a result of the accident, the dose contribution from the initial activity in the RCS is insignificant.

The maximum dose to the whole body and the thyroid that an individual at the exclusion area boundary can receive for 2 hours following an accident, or at the low population zone outer boundary for the radiological release duration, is specified in 10 CFR 100.11. The limits on RCS specific activity ensure that the offsite doses are appropriately limited, as required by NUREG-0800, "U.S. Nuclear Regulatory Commission Standard Review Plan," Section 15.1.5, "Steam System Piping Failures Inside and Outside of Containment (PWR)," Appendix A, "Radiological Consequences of Main Steam Line Failures Outside Containment," Revision 2, for MSLB accidents and NUREG-0800, "U.S. Nuclear Regulatory Commission Standard Review Plan," Section 15.6.3, "Radiological Consequences of Steam Generator Tube Failure (PWR)," Revision 2, for SGTR accidents.

The maximum dose to the whole body, or its equivalent to any part of the body, that an individual can receive in the plant control room for the duration of an accident is specified in General Design Criterion 19 (GDC 19) contained in Appendix A to 10 CFR 50. The limits on RCS specific activity ensure that the doses are less than the GDC 19 limits during analyzed transients and accidents, as required by NUREG-0800, Section 6.4, "Control Room Habitability System," Revision 2, and Regulatory Position C.4.5 of NRC Regulatory Guide (RG) 1.195, "Methods

and Assumptions for Evaluating Radiological Consequences of Design Basis Accidents at Light-Water Nuclear Power Reactors."

The SGTR and MSLB radiological consequence analyses establish the acceptance limits for the TS 3.4.16 RCS specific activity. These analyses consider two cases of RCS iodine specific activity. Case 1 assumes that an accident-initiated iodine spike occurs, which results in an increase in the rate of iodine release from the fuel rods containing cladding defects to the primary coolant immediately after an MSLB or SGTR. Case 2 assumes that a preaccident iodine spike occurs due to a transient prior to the MSLB or SGTR. The results of the SGTR radiological consequence analyses are described in [FSAR Update sections 15.5.20.1 and 15.5.20.2]. The results of the MSLB radiological consequence analyses are described in [FSAR Update section 15.5.18.1].

[The Case 1 radiological consequence analyses for SGTR and MSLB assume that the initial reactor coolant iodine specific activity corresponds to an isotope mixture that bounds the proposed LCO 3.4.16 limit. The initial isotopic mix establishes the relative concentrations for each isotope. The iodine concentrations are then changed to achieve a DEI of 1.0 µCi/gm, while maintaining the initial isotopic ratios.]

This analysis assumption provides the basis for the iodine specific activity limit of 1.0 µCi/gm contained in current TS 3.4.16 Condition A and SR 3.4.16.2. Thyroid dose conversion factors based on [Table E-7 of NRC RG 1.109, Revision 1, 1977, or ICRP Publication 30, 1979, have been used in radiological consequence analyses performed to date.] Any of the NRC-approved thyroid dose conversion factor references cited in the revised definition of DOSE EQUIVALENT I-131 may be used in future analyses after this amendment is approved.

Case 1 also assumes an accident-initiated iodine spike that increases the rate of iodine release from the fuel rods containing cladding defects to the primary coolant immediately after an MSLB or SGTR. The iodine spiking factor is assumed to be [500 for all of the MSLB and SGTR radiological consequence evaluation calculations except the SGTR exclusion area boundary calculation. The iodine spiking factor is assumed to be 335 for the SGTR radiological consequence evaluation calculation for the exclusion area boundary.]

[The Case 2 radiological consequence analyses for SGTR and MSLB assume the initial reactor coolant iodine specific activity is a factor of 60 higher than Case 1 due to a preaccident iodine spike caused by a transient prior the accident.] This [bounds] the allowable RCS specific activity value of 60 µCi/gm contained in current TS Figure 3.4.16-1 for

RATED THERMAL POWER (RTP) between 80 percent and 100 percent. TS Figure 3.4.16-1 provides DEI concentration limits during short periods in which iodine spiking may occur due to a power transient.

In both Cases 1 and 2 radiological consequence analyses for SGTR and MSLB, the noble gas specific activity in the reactor coolant is assumed to be [651] μCi/gm DEX. The initial DEX concentrations were calculated assuming [1 percent failed fuel] and using [whole body dose conversion factors for air submission based on Table III.1 of EPA Federal Guidance Report No. 12, EPA-402-R-93-081, "External Exposure to Radionuclides in Air, Water, and Soil," 1993].

3.2 RCS Specific Activity

The RCS specific activity level is used in design basis accident analyses to determine the thyroid and whole body radiological consequences of accidents that involve the release of RCS activity. For events that also include fuel damage, the dose contribution from the initial activity in the RCS is insignificant.

The current definition for DEI is based on thyroid dose conversion factors and reflects a licensing model in which the radiological consequences of iodine releases for accidents are reported as thyroid and whole body doses.

LCO 3.4.16 specifies the limit for RCS gross specific activity as 100/$\bar{E}$ μCi/gm. "$\bar{E}$" is defined as:

> "$\bar{E}$ 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 > [10] minutes, making up at least 95% of the total non-iodine activity in the coolant."

In performing accident dose analyses in which primary coolant is released, the concentration of noble gas activity in the coolant is assumed to be that level associated with [1 percent failed fuel], which closely approximates the TS 3.4.16 limit of 100/$\bar{E}$ μCi/gm under accident conditions.

LCO 3.4.16 specifies a limit for RCS iodine concentration during equilibrium operation. In recognition of the potential for exceeding the equilibrium iodine concentration due to iodine spiking following power transients, the LCO also permits the equilibrium value to be exceeded for

a period of less than or equal to 48 hours. As currently presented, the value for the maximum allowable iodine concentration during the 48-hour period of elevated activity is a function of power level as provided in TS Figure 3.4.16-1. In accordance with the figure, as power is reduced below 80 percent RTP, the allowable RCS iodine concentration increases from 60 µCi/gm DEI to as high as [275] µCi/gm DEI at [25] percent RTP. Below [25] percent RTP, no further increase is defined.

The curve contained in TS Figure 3.4.16-1 was initiated by the Atomic Energy Commission (AEC) in a June 12, 1974, letter from the AEC on the subject, "Proposed Standard Technical Specifications for Primary Coolant Activity." This letter does not provide any technical basis for the curve.

3.3 Purpose for Proposed Amendments

The addition of the new DEX limit and TS 3.4.16 changes are being proposed in order to implement an RCS specific activity LCO that better reflects the whole body radiological consequence analyses, which are sensitive to the noble gas activity in the primary coolant but not to the other, nongaseous activity currently captured in the $\bar{E}$ definition. The $\bar{E}$ definition includes radioisotopes that decay by the emission of both gamma and beta radiation. Current Condition B of LCO 3.4.16 would rarely, if ever, be entered for exceeding 100/$\bar{E}$ since that value is very high (the denominator is very low) if beta emitters such as tritium (H-3) and Fluorine-18 (F-18) are included in that value, as required by the $\bar{E}$ definition. [ ]

4.0 TECHNICAL ANALYSIS

4.1 TS Changes

Revision to Definition of DEI

The current TS 1.1 definition for DEI is revised [to specify the table in which the ICRP 30 thyroid dose conversion factors are located and] to add a new reference for acceptable thyroid dose conversion factors. Also, the word "thyroid" is deleted from the first sentence, [the word "October" is deleted from the RG 1.109 reference, and the title of ICRP 30 is removed].

[The specific Table in ICRP 30 Supplement to Part 1 located on pages 192-212 and titled "Committed Dose Equivalent in Target Organs or Tissues per Intake of Unit Activity" is added to the current definition for DEI. This change adds clarification to the location of the thyroid dose conversion factors in ICRP 30 and does not revise the ICRP 30 thyroid dose conversion factors currently allowed by TS 1.1. The revision to the

TS 1.1, "Definitions," to allow use of the ICRP 30 thyroid dose conversion factors was previously approved by the NRC in License Amendments 155 and 155 for DCPP Units 1 and 2 respectively on October 21, 2002.]

A new thyroid dose conversion factor reference [is] added to the DEI definition. The new reference [is] "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." EPA Federal Guidance Report No. 11 is referenced in RG 1.195, "Methods and Assumptions for Evaluating Radiological Consequences of Design Basis Accidents at Light-Water Nuclear Power Reactors," May 2003, Section C, "Regulatory Position," Subsection 4, "Dose Calculational Methodology," Subsection 4.1, "Offsite Dose Consequences," assumption 4.1.2 as acceptable for determining thyroid dose from inhalation. [The thyroid dose conversion factor values contained in Table 2.1 of EPA Federal Guidance Report No. 11 are provided to 3 significant digits. The thyroid dose conversion factor values contained in ICRP 30 Supplement to Part 1 pages 192-212 and Table 2.1 of EPA Federal Guidance Report No. 11 are the same when the EPA Federal Guidance Report No. 11 values are rounded to 2 significant digits.]

The deletion of the word "thyroid" from the first sentence, [the word "October" from the RG 1.109 reference, and the title of ICRP 30] [are] editorial change[s] only. [The month is removed from the RG 1.109 reference since it is unnecessary and the removal provides consistency in the DEI definition, which does not specify the month for the other referenced documents. The deletion of the title of ICRP 30 provides consistency with the current reference to RG 1.109 which does not include the title.]

Deletion of Definition for $\bar{E}$ - AVERAGE DISINTEGRATION ENERGY and Addition of New Definition for DEX

The current TS 1.1 Definition for $\bar{E}$ - AVERAGE DISINTEGRATION ENERGY is deleted and replaced with a new definition for DEX.

When $\bar{E}$ is determined using a design basis approach in which it is assumed that 1 percent of the power is generated by fuel rods having cladding defects and there is no removal of fission gases from the RCS letdown flow, the value of $\bar{E}$ is dominated by the Xe-133 isotope. The other nuclides have relatively small contributions. However, during normal plant operation there are typically only a small amount of fuel defects and the radioactive nuclide inventory can become dominated by tritium and corrosion and/or activation products, resulting in the determination of a

value of $\bar{E}$ that is very different than that which would be calculated using the design basis approach. Therefore, the radiological consequence analyses for accidents become disconnected from normal plant operation and the current TS 3.4.16 limit on gross specific activity is essentially meaningless. The use of $\bar{E}$ also results in a TS limit that can vary during operation as different values for $\bar{E}$ are determined, resulting in different values for the gross specific activity limit (100/$\bar{E}$ µCi/gm).

Additionally, since the concern associated with the RCS noble gas activity is the acute whole body dose that the operators and the general public might receive in the event of a postulated accident, the manner in which $\bar{E}$ is calculated gives undue importance to nuclides that are primarily beta radiation emitters. Beta radiation will contribute to a skin dose, but not to the whole body dose. Dose limits for the general population do not include consideration of the beta skin dose.

Therefore, the deletion of the current TS 1.1 Definition for $\bar{E}$ - AVERAGE DISINTEGRATION ENERGY and addition of a new definition for DEX will result in TS 3.4.16 requirements for RCS specific activity, which are consistent with the assumptions contained in the radiological consequence analyses.

The new definition for DEX is similar to the definition for DEI. The determination of DEX will be performed in a similar manner to that currently used in determining DEI, except that the calculation of DEX is based on the acute dose to the whole body and considers the noble gases [Kr-85m, Kr-87, Kr-88, Xe-133m, Xe-133, Xe-135m, Xe-135, and Xe-138], which are significant in terms of contribution to whole body dose. [Some noble gas isotopes are not included due to low concentration, short half life, or small dose conversion factor. Exclusion of Kr-85 and Xe-131m results in less than 1 percent of the whole body dose contributions from noble gases in the SGTR and MSLB radiological consequence analyses.] If a specific noble gas nuclide is not detected, the new definition states that it should be assumed the nuclide is present at the minimum detectable activity. This will result in a conservative calculation of DEX.

The new definition of DEX states that the determination of DEX shall be performed using the 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." [ ]. These dose conversion factors are applicable for determination of DEX. The use of the dose conversion factors for air submersion listed in Table III.1 of EPA Federal Guidance Report No. 12 is endorsed by RG 1.195, Subsection 4.1, assumption 4.1.4 as acceptable for determining whole

body doses because of the uniform body exposure associated with semi-infinite cloud dose modeling.

TS 3.4.16 LCO Revision

The TS 3.4.16 LCO is modified to specify that the iodine specific activity in terms of DEI and noble gas specific activity in terms of DEX shall be within limits.

Currently TS 3.4.16 states that the specific activity of the reactor coolant shall be within limits. The limits are currently not explicitly identified in the LCO but are instead defined in current Condition B and SR 3.4.16.1 for gross specific activity and in current Condition A and SR 3.4.16.2 for iodine specific activity.

The proposed change states "RCS DOSE EQUIVALENT I-131 and DOSE EQUIVALENT XE-133 specific activity shall be within limits." The DEI limit of less than or equal to 1.0 µCi/gm is contained in current Condition A and SR 3.4.16.2. In addition, the limit of 1.0 µCi/gm is consistent with the current SGTR and MSLB radiological consequence analyses discussed in Section 3.1 above.

The DEX limit of less than or equal to [600.0] µCi/gm is contained in revised SR 3.4.16.1 and is [less than the value of 651 µCi/gm. The DEX limit of 600.0 µCi/gm is bounded by the current SGTR and MSLB radiological consequences analyses discussed in Section 3.1 above which assumed a DEX value of 651 µCi/gm. The noble gas specific activity limit is based on the maximum accident analysis activity (equivalent to approximately 651 µCi/gm DEX) with approximately 8 percent margin. This margin more than accommodates the exclusion of those isotopes based on low concentration, short half life, or small dose conversion factors.]

The primary purpose of the TS 3.4.16 LCO on RCS specific activity is to support the dose analyses for design basis accidents. Whole body doses are primarily dependent on the noble gas concentration, not the nongaseous activity currently captured in the $\bar{E}$ definition. It is appropriate to have the TS 3.4.16 LCO apply to the noble gas specific activity in the RCS. Thus, it is acceptable that the current TS 3.4.16 limit on gross specific activity can be replaced by an LCO limit based on RCS noble gas specific activity in the form of DEX. The limit on the amount of noble gas activity in the RCS remains consistent with design basis accident radiological consequences analyses and would not fluctuate with variations in the calculated value of $\bar{E}$ during normal operation as is currently the case.

TS 3.4.16 Applicability Revision

The TS 3.4.16 Applicability is modified to include all of Mode 3 and Mode 4. It is necessary for the LCO to apply during all of Modes 1 through 4 to limit the potential radiological consequences of an SGTR or MSLB that may occur during these modes. In Modes 5 and 6, the steam generators (SG) are not used for decay heat removal, the RCS and SGs are depressurized, and primary to secondary leakage is minimal. Therefore, the monitoring of RCS specific activity during Modes 5 and 6 is not required.

TS 3.4.16 Condition A Revision

TS 3.4.16 Condition A is revised by replacing the limit ">1.0 µCi/gm" with the words "not within limit" to be consistent with the Revised TS 3.4.16 LCO format. The DEI limit of less than or equal to 1.0 µCi/gm is contained in SR 3.4.16.2. [The words "specific activity" are removed from TS 3.4.16 Condition A. These words are not required because they are redundant to the words proposed in the revised LCO 3.4.16. This change makes the TS 3.4.16 Condition A consistent with the wording used in NUREG-1431, Volume 1, Revision 3, "Standard Technical Specifications Westinghouse Plants," dated June 2004.]

TS 3.4.16 Required Action[s] A.1 [and A.2] Revision

TS 3.4.16 Required Action A.1 is modified to remove the reference to Figure 3.4.16-1 and insert a limit of less than or equal to 60 µCi/gm for DEI.

The curve contained in Figure 3.4.16-1 was initiated by the AEC in a June 12, 1974, letter from the AEC on the subject, "Proposed Standard Technical Specifications for Primary Coolant Activity." However, this letter does not provide any technical basis for the curve.

The Case 2 radiological consequence analyses for SGTR and MSLB accidents that take into account the preaccident iodine spike do not consider the elevated RCS iodine specific activities permitted by current TS Figure 3.4.16-1 for operation at power levels below 80 percent RTP (i.e., DEI of 60 µCi/gm at 80 percent RTP increasing linearly to [275] µCi/gm at [25] percent RTP). Instead, the Case 2 analyses assume a DEI concentration 60 times higher than the corresponding accident's Case 1 analysis assumption, [which corresponds to the 60 µCi/gm specific activity limit associated with 100 percent RTP operation as discussed in Section 3.1 above]. Therefore, TS 3.4.16 Required Action A.1 should be

based on a limit of 60 µCi/gm to be consistent with the assumptions contained in the radiological consequence analyses. It is not expected that plant operation at reduced power levels would result in iodine specific activity levels that exceed the 60 µCi/gm upper limit defined for full power operation.

[The words "specific activity" are removed from TS 3.4.16 Required Actions A.1 and A.2. These words are not required because they are redundant to the words proposed in new LCO 3.4.16. This change makes the TS 3.4.16 Required Actions A.1 and A.2 consistent with the wording used in NUREG-1431, Volume 1, Revision 3, "Standard Technical Specifications Westinghouse Plants," dated June 2004.]

TS 3.4.16 Condition B Revision to Include Action for DEX Limit

Current TS 3.4.16 Condition B is replaced with a new Condition B for DEX not within limits. This change is made to be consistent with the change to the TS 3.4.16 LCO, which requires the DEX specific activity to be within limits as discussed above. The DEX limit of [600.0] µCi/gm is contained in revised SR 3.4.16.1. The limit of [600.0] µCi/gm is [bounded by the current SGTR and MSLB radiological consequence analyses, which assume the steady state initial RCS noble gas specific activity is [651] µCi/gm DEX for both the Case 1 and Case 2 analyses.] The primary purpose of the TS 3.4.16 LCO on RCS specific activity and its associated conditions is to support the dose analyses for design basis accidents. The whole body dose is primarily dependent on the noble gas activity, not the nongaseous activity currently captured in the $\bar{E}$ definition and limited by current TS 3.4.16 Condition B.

The completion time for revised TS 3.4.16 Required Action B.1 will require restoration of DEX to within limit in 48 hours. This is consistent with the completion time for current Required Action A.2 for DEI. [Since the radiological consequences reported for SGTR and MSLB in FSAR Update Section 15.5.18.1 and FSAR Update Table 15.5-71 demonstrate that thyroid doses are a greater percentage of the applicable Standard Review Plan acceptance criteria than whole body doses, it then follows that the completion time for noble gas activity being out of specification in revised Required Action B.1 should be at least as great as the completion time for iodine specific activity being out of specification in current Required Action A.2.] The completion time of 48 hours for revised Required Action B.1 is acceptable since it is expected that, if there were a noble gas spike, the normal coolant noble gas concentration would be restored within this time period. Also, there is a low probability of an MSLB or SGTR occurring during this time period.

A NOTE is added, which states that LCO 3.0.4c is applicable. This is consistent with the NOTE applicable to current Required Actions A.1 and A.2 for DEI. This NOTE permits entry into the applicable mode(s), relying on Required Action B.1 while the DEX LCO limit is not met. This mode change 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.

TS 3.4.16 Condition C Revision

TS 3.4.16 Condition C is revised to include Condition B, if the required action and associated completion time of Condition B is not met. This is consistent with the changes made to Condition B, which will no longer specify a shutdown track. Condition C is also revised to replace the limit on DEI from Figure 3.4.16-1 with a value of greater than 60 µCi/gm. This change makes Condition C consistent with the changes made to TS 3.4.16 Required Action A.1.

TS 3.4.16 Required Action C.1 is changed to require the plant to be in Mode 3 within 6 hours and a new Required Action C.2 is added, which requires the plant to be in Mode 5 within 36 hours. These changes are consistent with the changes made to the TS 3.4.16 Applicability. The revised LCO is applicable throughout all of Modes 1 through 4 to limit the potential radiological consequences of an SGTR or MSLB that may occur during these modes. Therefore, Condition C needs to default to a Mode 5 end state for TS 3.4.16 to no longer be applicable.

A new TS 3.4.16 Required Action C.2 completion time of 36 hours is added for the plant to reach Mode 5. This completion time is reasonable, based on operating experience, to reach Mode 5 from full power conditions in an orderly manner and without challenging plant systems. The value of 36 hours is consistent with other TS, which have a completion time to reach Mode 5.

SR 3.4.16.1 Revision to Include Surveillance for DEX

The current SR 3.4.16.1 surveillance for RCS gross specific activity is deleted and replaced with a surveillance to verify that the reactor coolant DEX specific activity is less than or equal to [600.0] µCi/gm. This change provides a surveillance for the new LCO limit added to TS 3.4.16 for DEX.

The revised SR 3.4.16.1 surveillance requires performing a gamma isotopic analysis as a measure of the noble gas specific activity of the

reactor coolant at least once every 7 days. This measurement is the sum of the degassed gamma activities and the gaseous gamma activities in the sample taken. The surveillance provides an indication of any increase in the noble gas specific activity.

The results of the surveillance on DEX allow proper remedial action to be taken before reaching the LCO limit under normal operating conditions. The 7-day frequency considers the unlikelihood of a gross fuel failure during this time.

If a specific noble gas nuclide listed in the new definition for DEX in TS 1.1 is not detected, it should be assumed to be present at the minimum detectable activity. This is consistent with the new TS 1.1 Definition for DEX and will ensure a conservative calculation of DEX when noble gas nuclides are not detected.

The SR is modified by a NOTE, which allows entry into Mode 4, Mode 3, and Mode 2 prior to performing the surveillance. This allows the surveillance to be performed in those modes, prior to entering Mode 1, similar to the current surveillance SR 3.4.16.2 for DEI.

SR 3.4.16.3 Deletion

Current SR 3.4.16.3 is deleted. The TS 3.4.16 LCO on RCS specific activity supports the dose analyses for design basis accidents, in which the whole body dose is primarily dependent on the noble gas concentration, not the nongaseous activity currently captured in the $\bar{E}$ definition. Therefore, with the elimination of the limit for RCS gross specific activity and the addition of the new LCO limit for noble gas specific activity, this SR to determine $\bar{E}$ is no longer required.

4.2 Impact on Radiological Consequence Analyses

The proposed changes do not impact the radiological consequences of any design basis accident. Replacing the limit on $\bar{E}$ with a limit on DEX based on the values used in the current radiological consequence analyses will limit the RCS noble gas concentrations to values which are consistent with the radiological consequence analyses, for those noble gases which are significant in terms of contribution to dose. These changes will also limit any potential RCS iodine specific activity excursion to the value currently associated with full power operation (i.e., 60 µCi/gm DEI). This concentration is more restrictive on plant operation than the current LCO, which allows operation up to [275] µCi/gm DEI as indicated in Figure 3.4.16-1. The proposed changes eliminate the potential for

radiological consequences of a postulated accident to exceed those previously calculated.

4.3 Summary

In summary, the proposed changes will revise the definition of DOSE EQUIVALENT I-131, delete the definition of $\bar{E}$ - AVERAGE DISINTEGRATION ENERGY, add a new definition for DOSE EQUIVALENT XE-133, revise TS 3.4.16 to specify an LCO limit on DOSE EQUIVALENT I-131, add a new LCO limit to TS 3.4.16 for DOSE EQUIVALENT XE-133, increase the completion time of Required Action B.1, delete TS Figure 3.4.16-1, and revise the TS 3.4.16 conditions and required actions accordingly. Also, the Applicability of LCO 3.4.16 is extended to reflect the modes during which pertinent accidents (SGTR and MSLB) could be postulated to occur, SR 3.4.16.1 is revised to verify DOSE EQUIVALENT XE-133 is within the prescribed limit, and SR 3.4.16.3 is deleted.

The revised definition of DOSE EQUIVALENT I-131 allows the use of thyroid dose conversion factors, which are acceptable for determining thyroid dose. The above changes will result in TS 3.4.16 requirements for RCS specific activity, which are consistent with the assumptions contained in the radiological consequence analyses. The primary purpose of the TS 3.4.16 LCO on RCS specific activity is to support the dose analyses for design basis accidents in which the whole body dose is primarily dependent on the noble gas specific activity, not the nongaseous activity currently captured in the $\bar{E}$ definition. The TS 3.4.16 conditions, required actions, and surveillance requirements are revised accordingly to support the deletion of the requirements for gross specific activity based on $\bar{E}$ and the addition of the new LCO limit for DOSE EQUIVALENT XE-133. The proposed changes do not impact the radiological consequences of any design basis accident.

5.0 REGULATORY ANALYSIS

This section addresses the standards of 10 CFR 50.92 as well as the applicable regulatory requirements and acceptance criteria.

The proposed amendment would revise the definition of DOSE EQUIVALENT I-131, delete the definition of $\bar{E}$ - AVERAGE DISINTEGRATION ENERGY, add a new definition for DOSE EQUIVALENT XE-133, revise TS 3.4.16 to specify an LCO limit on DOSE EQUIVALENT I-131, add a new LCO limit to TS 3.4.16 for DOSE EQUIVALENT XE-133, increase the completion time of Required Action B.1, delete TS Figure 3.4.16-1, and revise the TS 3.4.16 conditions and required actions accordingly. In addition, the Applicability of LCO 3.4.16 is extended to

reflect the modes during which pertinent accidents (SGTR and MSLB) could be postulated to occur, SR 3.4.16.1 is revised to verify DOSE EQUIVALENT XE-133 is within the prescribed limit, and SR 3.4.16.3 is deleted.

5.1 No Significant Hazards Consideration

[PG&E] has evaluated whether or not a significant hazards consideration is involved with the proposed amendment by focusing on the 3 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?

Response: No.

The proposed changes to add a new thyroid dose conversion factor reference to the definition of DOSE EQUIVALENT I-131, eliminate the definition of $\bar{E}$ - AVERAGE DISINTEGRATION ENERGY, add a new definition of DOSE EQUIVALENT XE-133, replace the Technical Specification (TS) 3.4.16 limit on reactor coolant system (RCS) gross specific activity with a limit on noble gas specific activity in the form of a Limiting Condition for Operation (LCO) on DOSE EQUIVALENT XE-133, replace TS Figure 3.4.16-1 with a maximum limit on DOSE EQUIVALENT I-131, extend the Applicability of LCO 3.4.16, and make corresponding changes to TS 3.4.16 to reflect all of the above are not accident initiators and have no impact on the probability of occurrence for any design basis accidents.

The proposed changes will have no impact on the consequences of a design basis accident because they will limit the RCS noble gas specific activity to be consistent with the values assumed in the radiological consequence analyses. The changes will also limit the potential RCS iodine concentration excursion to the value currently associated with full power operation, which is more restrictive on plant operation than the existing allowable RCS iodine specific activity at lower power levels.

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 accident from any accident previously evaluated?

Response: No.

The proposed changes do not alter any physical part of the plant nor do they affect any plant operating parameters besides the allowable specific activity in the RCS. The changes that impact the allowable specific activity in the RCS are consistent with the assumptions assumed in the current radiological consequence analyses.

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

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

Response: No.

The acceptance criteria related to the proposed changes involve the allowable control room and offsite radiological consequences following a design basis accident. The proposed changes will have no impact on the radiological consequences of a design basis accident because they will limit the RCS noble gas specific activity to be consistent with the values assumed in the radiological consequence analyses. The changes will also limit the potential RCS iodine specific activity excursion to the value currently associated with full power operation, which is more restrictive on plant operation than the existing allowable RCS iodine specific activity at lower power levels.

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

Based on the above evaluation, [PG&E] 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

The regulatory guidance documents associated with this LAR include:

- NUREG-0800, "U.S. Nuclear Regulatory Commission Standard Review Plan," Section 15.1.5, "Steam System Piping Failures Inside and Outside of Containment (PWR)," Appendix A,

"Radiological Consequence of Main Steam Line Failures Outside Containment," Revision 2, that identifies the thyroid and whole body offsite radiological consequence acceptance criteria for main steam line break accidents.

- NUREG-0800, "U.S. Nuclear Regulatory Commission Standard Review Plan," Section 15.6.3, "Radiological Consequences of Steam Generator Tube Failure (PWR)," Revision 2, that identifies the thyroid and whole body offsite radiological consequence acceptance criteria for steam generator tube rupture accidents.

- NUREG-0800, "U.S. Nuclear Regulatory Commission Standard Review Plan," Section 6.4, "Control Room Habitability System," Revision 2, that identifies the thyroid, whole body, and beta skin radiological consequence acceptance criteria for control room occupants.

- RG 1.195, "Methods and Assumptions for Evaluating Radiological Consequences of Design Basis Accidents at Light-Water Nuclear Power Reactors," that provides acceptable dose conversion factors, radiological consequence acceptance criteria, and other dose analysis methodology parameters.

There are no changes being proposed in this amendment application such that commitments to the regulatory guidance documents above would come into question. The evaluations documented above confirm that [DCPP] will continue to comply with all applicable regulatory requirements.

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

[PG&E] has evaluated the proposed amendment and has determined that the proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluents that may be released offsite, or (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

7.1 References

1. Environmental Protection Agency (EPA) Federal Guidance Report No. 11, EPA-520/1-88-020, "Limiting Values of Radionuclide Intake and Air Concentration and Dose Conversion Factors for Inhalation, Submersion, and Ingestion," September 1988.
2. Environmental Protection Agency (EPA) Federal Guidance Report No. 12, EPA-402-R-93-081, "External Exposure to Radionuclides in Air, Water, and Soil," 1993.
3. International Commission on Radiological Protection (ICRP) Publication 30, "Limits for Intakes of Radionuclides by Workers," ICRP, 1979.
4. Atomic Energy Commission (AEC) letter "Proposed Standard Technical Specifications for Primary Coolant Activity," dated June 12, 1974.
5. Regulatory Guide 1.195, "Methods and Assumptions for Evaluating Radiological Consequences of Design Basis Accidents at Light-Water Nuclear Power Reactors," May 2003.
6. Regulatory Guide 1.109, Revision 1, "Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50, Appendix I," October 1977.
7. Atomic Energy Commission (AEC) Report TID-14844, "Calculation of Distance Factors for Power and Test Reactor Sites," March 1962.
8. NUREG-0800, "U.S. Nuclear Regulatory Commission Standard Review Plan," Section 15.1.5, "Steam System Piping Failures Inside and Outside of Containment (PWR)," Appendix A, "Radiological Consequences of Main Steam Line Failures Outside Containment," Revision 2, July 1981.
9. NUREG-0800, "U.S. Nuclear Regulatory Commission Standard Review Plan," Section 15.6.3, "Radiological Consequences of a Steam Generator Tube Failure (PWR)," Revision 2, July 1981.
10. NUREG-0800, "U.S. Nuclear Regulatory Commission Standard Review Plan," Section 6.4, "Control Room Habitability System," Revision 2, July 1981.

11. NUREG-1512, "Final Safety Evaluation Report Related to the Certification of the AP600 Standard Design, Docket No. 52-003," August 1998.

12. NUREG-1431, Volume 1, Revision 3, "Standard Technical Specifications Westinghouse Plants," dated June 2004.

13. NRC License Amendment No. 155 to Facility Operating License No. DPR-80 and Amendment No. 155 to Facility Operating License No. DPR-82 for DCPP, Units 1 and 2, respectively, "Diablo Canyon Nuclear Power Plant, Unit Nos. 1 and 2 - Issuance of Amendment RE: Revision of Technical Specifications Section 3.9.4, Containment Penetrations (TAC Nos. MB3595 and MB3596)," dated October 21, 2002.

7.2 Precedent

The TS developed for the Westinghouse AP600 and AP1000 advanced reactor designs utilize an LCO for RCS DEX activity in place of the LCO on gross specific activity based on $\bar{E}$. This approach was approved by the NRC for the AP600 in NUREG-1512, "Final Safety Evaluation Report Related to the Certification of the AP600 Standard Design, Docket No. 52-003," dated August 1998, and for the AP1000 in the NRC letter to Westinghouse Electric Company dated September 13, 2004. The curve in current TS Figure 3.4.16-1 was not included in the TS approved for the AP600 and AP1000 advanced reactor designs.

Proposed Technical Specification Changes (marked-up)

1.1 Definitions (continued)

when inhaled | per | iodine isotopes | combined activities

DOSE EQUIVALENT I-131	DOSE EQUIVALENT I-131 shall be that concentration of I-131 (microcuries/gram) that 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, AEC, 1962, "Calculation of Distance Factors for Power and Test Reactor Sites," or ~~those listed in~~ Table E-7 of ~~NRC~~ Regulatory Guide 1.109, ~~Rev. 1, October~~, 1977, or ~~those listed in~~ International Commission on Radiological Protection Publication 30, ~~"Limits for Intakes of Radionuclides by Workers," 1979~~.
~~$\bar{E}$ - AVERAGE DISINTEGRATION ENERGY~~	$\bar{E}$ 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 > 10 minutes, making up at least 95% of the total non-iodine activity in the coolant.
ENGINEERED SAFETY FEATURE (ESF) RESPONSE TIME	The ESF 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. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured. In lieu of measurement, response time may be verified for selected components provided that the components and methodology for verification have been previously reviewed and approved by the NRC.
LEAKAGE	LEAKAGE shall be: a. <u>Identified LEAKAGE</u> 1. LEAKAGE, such as that from pump seals or valve packing (except reactor coolant pump (RCP) seal water injection or leakoff), that is captured and conducted to collection systems or a sump or collecting tank; 2. LEAKAGE into the containment atmosphere from sources that are both specifically located and known either not to interfere with the operation of leakage detection systems or not to be pressure boundary LEAKAGE; or

Revision 1, NRC | (ICRP) | 1979, | Insert 1 | Insert 2 | Insert 3 | Insert 4

(continued)

Technical Specification Inserts

Insert 1

The determination of DOSE EQUIVALENT I-131 shall be performed using thyroid dose conversion factors from

Insert 2

Supplement to Part 1, pages 192-212, Table titled "Committed Dose Equivalent in Target Organs or Tissues per Intake of Unit Activity," or 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 3

DOSE EQUIVALENT XE-133

Insert 4

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-87, Kr-88, 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 the 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."

3.4 REACTOR COOLANT SYSTEM (RCS)

Insert 5

3.4.16 RCS Specific Activity

LCO 3.4.16 The specific activity of the reactor coolant shall be within limits.

APPLICABILITY: MODES 1 and 2, 1, 2, 3, and 4.
MODE 3 with RCS average temperature (T_{avg}) ≥ 500°F.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. DOSE EQUIVALENT I-131 specific activity > 1.0 µCi/gm. not within limit.	----------NOTE---------- LCO 3.0.4c is applicable. ----------	
	A.1 Verify DOSE EQUIVALENT I-131 specific activity within the acceptable region of Figure 3.4.16-1.	Once per 4 hours ≤ 60 µCi/gm.
	AND	
Insert 6	A.2 Restore DOSE EQUIVALENT I-131 specific activity to within limit.	48 hours
B. Gross specific activity of the reactor coolant 100/Ē µCi/gm.	B.1 Be in MODE 3 with T_{avg} < 500°F. Insert 7	6 hours 48
C. Required Action and associated Completion Time of Condition A not met. or B	C.1 Be in MODE 3 with T_{avg} to < 500°F. Insert 8	6 hours 36 hours
OR DOSE EQUIVALENT I-131 specific activity in the unacceptable region of Figure 3.4.16-1. > 60 µCi/gm.		

Insert 9

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.4.16.1	Verify reactor coolant gross specific activity $\leq 100/\bar{E}$ µCi/gm.	7 days
SR 3.4.16.2	----------NOTE---------- Only required to be performed in MODE 1. ---------- Verify reactor coolant DOSE EQUIVALENT I-131 specific activity ≤ 1.0 µCi/gm.	14 days AND Between 2 and 6 hours after a THERMAL POWER change of ≥ 15% RTP within a 1 hour period.
SR 3.4.16.3	----------NOTE---------- Not required to be performed until 31 days after a minimum of 2 effective full power days and 20 days of MODE 1 operation have elapsed since the reactor was last subcritical for ≥ 48 hours. ---------- Determine $\bar{E}$ from a sample taken in MODE 1 after a minimum of 2 effective full power days and 20 days of MODE 1 operation have elapsed since the reactor was last subcritical for ≥ 48 hours.	184 days

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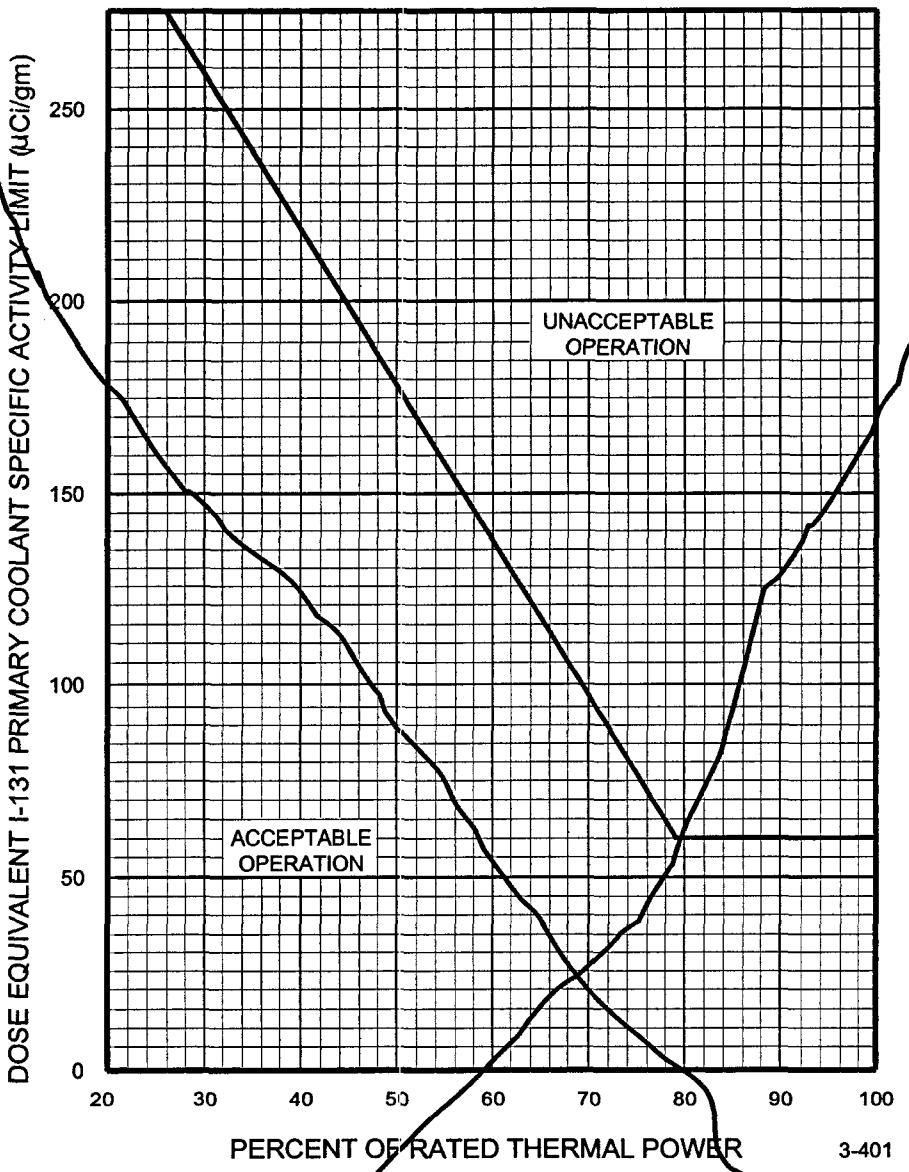

Figure 3.4-1

DOSE EQUIVALENT I-131 REACTOR COOLANT SPECIFIC ACTIVITY LIMIT VERSUS PERCENT OF RATED THERMAL POWER WITH THE REACTOR COOLANT SPECIFIC ACTIVITY > 1 µCI/GRAM DOSE EQUIVALENT I-131

Technical Specification Inserts

Insert 5

RCS DOSE EQUIVALENT I-131 and DOSE EQUIVALENT XE-133 specific activity shall be within limits.

Insert 6

DOSE EQUIVALENT XE-133 not within limit.

Insert 7

----------NOTE----------
LCO 3.0.4c is applicable.

Restore DOSE EQUIVALENT XE-133 to within limit.

Insert 8

Be in MODE 3.

AND

C.2 Be in MODE 5.

Insert 9

----------NOTE----------
Only required to be performed in MODE 1.

Verify reactor coolant DOSE EQUIVALENT XE-133 specific activity ≤ 600.0 µCi/gm.

Proposed Technical Specification Changes (retyped)

Remove Page	Insert Page
1.1-3	1.1-3 1.1-3a
3.4-35 3.4-36 3.4-37	3.4-35 3.4-36

1.1 Definitions (continued)

DOSE EQUIVALENT I-131	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 thyroid dose conversion factors from Table III of TID-14844, AEC, 1962, "Calculation of Distance Factors for Power and Test Reactor Sites," or Table E-7 of Regulatory Guide 1.109, Revision 1, NRC, 1977, or International Commission on Radiological Protection (ICRP) Publication 30, 1979, Supplement to Part 1, pages 192-212, Table titled "Committed Dose Equivalent in Target Organs or Tissues per Intake of Unit Activity," or 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."
DOSE EQUIVALENT XE-133	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-87, Kr-88, 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 the 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."

(continued)

1.1 Definitions (continued)

ENGINEERED SAFETY FEATURE (ESF) RESPONSE TIME	The ESF 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. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured. In lieu of measurement, response time may be verified for selected components provided that the components and methodology for verification have been previously reviewed and approved by the NRC.
LEAKAGE	LEAKAGE shall be: a. Identified LEAKAGE 1. LEAKAGE, such as that from pump seals or valve packing (except reactor coolant pump (RCP) seal water injection or leakoff), that is captured and conducted to collection systems or a sump or collecting tank; 2. LEAKAGE into the containment atmosphere from sources that are both specifically located and known either not to interfere with the operation of leakage detection systems or not to be pressure boundary LEAKAGE; or

(continued)

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.16 RCS Specific Activity

LCO 3.4.16 RCS DOSE EQUIVALENT I-131 and DOSE EQUIVALENT XE-133 specific activity shall be within limits.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. DOSE EQUIVALENT I-131 not within limit.	----------NOTE---------- LCO 3.0.4c is applicable. ---------- A.1 Verify DOSE EQUIVALENT I-131 ≤ 60 µCi/gm. AND A.2 Restore DOSE EQUIVALENT I-131 to within limit.	Once per 4 hours 48 hours
B. DOSE EQUIVALENT XE-133 not within limit.	B.1 ----------NOTE---------- LCO 3.0.4c is applicable. ---------- Restore DOSE EQUIVALENT XE-133 to within limit.	48 hours
C. Required Action and associated Completion Time of Condition A or B not met. OR DOSE EQUIVALENT I-131 > 60 µCi/gm.	C.1 Be in MODE 3. AND C.2 Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.4.16.1	----------NOTE---------- Only required to be performed in MODE 1. ---------- Verify reactor coolant DOSE EQUIVALENT XE-133 specific activity ≤ 600.0 µCi/gm.	7 days
SR 3.4.16.2	----------NOTE---------- Only required to be performed in MODE 1. ---------- Verify reactor coolant DOSE EQUIVALENT I-131 specific activity ≤ 1.0 µCi/gm.	14 days AND Between 2 and 6 hours after a THERMAL POWER change of ≥ 15% RTP within a 1 hour period.

Changes to Technical Specification Bases Pages
(For information only)

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.16 RCS Specific Activity

BASES

exclusion area

Insert 1

Insert 2

BACKGROUND

The maximum dose to the [whole body and the thyroid] that an individual at the ~~site~~ boundary can receive for 2 hours **following** ~~during~~ an accident is specified in 10 CFR 100.**11** (Ref. 1). The limits on specific activity ensure that the doses are ~~held to a fraction of the 10 CFR 100 limits~~ during analyzed transients and accidents.

appropriately limited

The RCS specific activity LCO limits the allowable concentration level of radionuclides in the reactor coolant. The LCO limits are established to minimize the ~~offsite radioactivity~~ dose consequences in the event of a steam generator tube rupture (SGTR) accident.

steam line break (SLB) or

The LCO contains specific activity limits for both DOSE EQUIVALENT I-131 and ~~gross specific activity~~. The allowable levels are intended to ~~limit the 2 hour dose at the site boundary to a fraction of the 10 CFR 100 dose guideline limits. The limits in the LCO are standardized, based on parametric evaluations of offsite radioactivity dose consequences for typical site locations.~~

Insert 3

Insert 4

~~The parametric evaluations showed the potential offsite dose levels for a SGTR accident were an appropriate fraction of the 10 CFR 100 dose guideline limits. Each evaluation assumes a broad range of site applicable atmospheric dispersion factors in a parametric evaluation.~~

APPLICABLE SAFETY ANALYSES

The LCO limits on the specific activity of the reactor coolant ensures that the resulting **offsite and control room** ~~2 hour~~ doses ~~at the site boundary will not exceed a fraction of the 10 CFR 100 dose guideline limits following a~~ SGTR accident. The ~~SGTR~~ safety analyse**is** (Ref**s**. **3 and 4** ~~2~~) assume**s** the specific activity of the reactor coolant **is** at **or more conservative than** the LCO limit**s,** and an existing reactor coolant steam generator (SG) tube leakage rate of [1 gpm] **exists**. The safety analyse**is** assume**s** the specific activity of the secondary coolant at its limit of 0.1 µCi/gm DOSE EQUIVALENT I-131 from LCO 3.7.18, "Secondary Specific Activity."

Insert 5

The analysis for the **SLB and** SGTR accident**s** establishes the acceptance limits for RCS specific activity. Reference to the**is**e analyse**is** is used to assess changes to the unit that could affect RCS specific activity, as they relate to the acceptance limits.

is

The analyse**is** ~~is for~~ two cases of reactor coolant specific activity. One ~~case~~ assumes specific activity at 1.0 µCi/gm DOSE EQUIVALENT I-131 with a concurrent large iodine spike that increases ~~the I-131 activity in the reactor coolant by a factor of about 50 immediately after~~

consider

Insert 6

(continued)

APPLICABLE SAFETY ANALYSES (continued)

~~the accident~~. The second case assumes the initial reactor coolant iodine activity at [60.0] µCi/gm DOSE EQUIVALENT I-131 due to a pre-accident iodine spike caused by an RCS transient. In both cases, the noble gas ~~activity in the reactor coolant assumes 1% failed fuel, which closely equals the LCO limit of 100/$\bar{E}$ µCi/gm for gross specific activity.~~

Insert 7

The **SGTR** analysis also assumes a loss of offsite power at the same time as the **reactor trip** ~~SGTR event~~. The SGTR causes a reduction in reactor coolant inventory. The reduction initiates a reactor trip from a low pressurizer pressure signal [or an RCS overtemperature ΔT signal.]

The ~~coincident~~ loss of offsite power causes the steam dump valves to close to protect the condenser. The rise in pressure in the ruptured SG discharges radioactively contaminated steam to the atmosphere through the SG power operated relief valves [and the main steam safety valves]. The unaffected SGs remove core decay heat by venting steam to the atmosphere until the cooldown ends.

Insert 8

~~The safety analysis shows the radiological consequences of an SGTR accident are within a fraction of the Reference 1 dose guideline limits.~~ Operation with iodine specific activity levels greater than the LCO limit is permissible, if the activity levels do not exceed ~~the limits shown in Figure 3.4.16-1~~ [**60.0**] **µCi/gm DOSE EQUIVALENT I-131**, for more than 48 hours. ~~The safety analysis has concurrent and pre-accident iodine spiking levels up to 60.0 µCi/gm DOSE EQUIVALENT I-131.~~

~~The remainder of the above limit permissible iodine levels shown in Figure 3.4.16-1 are acceptable because of the low probability of a SGTR accident occurring during the established 48 hour time limit. The occurrence of an SGTR accident at these permissible levels could increase the site boundary dose levels, but still be within 10CFR100 dose guideline limits.~~

The limits on RCS specific activity are also used for establishing standardization in radiation shielding and plant personnel radiation protection practices.

Insert 9

RCS specific activity satisfies Criterion 2 of 10 CFR 50.36(c)(2)(ii).

Insert 10

LCO

The specific iodine activity is limited to [1.0] ~~µCi/gm~~ DOSE EQUIVALENT I-131, and the ~~gross specific activity in the reactor coolant is limited to the number of µCi/gm equal to 100 divided by $\bar{E}$ (average disintegration energy of the sum of the average beta and gamma energies of the coolant nuclides). The limit on DOSE EQUIVALENT I-131 ensures the 2 hour thyroid dose to an individual at the site boundary during the Design Basis Accident (DBA) will be a fraction of the allowed thyroid dose. The limit on gross specific activity~~

(continued)

BASES

LCO (continued)

~~ensures the 2 hour whole body dose to an individual at the site boundary during the DBA will be a fraction of the allowed whole body dose.~~

The **SLB and** SGTR accident analysis (Refs. **3 and 4** ~~2~~) shows that the ~~2 hour site boundary~~ **calculated** doses ~~levels~~ are within acceptable limits. Violation of the LCO may result in reactor coolant radioactivity levels that could, in the event of an **SLB or** SGTR, lead to ~~site boundary~~ doses that exceed the ~~10 CFR 100 dose guideline limits~~ **[SRP] acceptance criteria (Ref. 2)**.

APPLICABILITY

In MODES 1, ~~and~~ 2, ~~and in MODE~~ 3, **and 4,** ~~with RCS average temperature ≥ 500°F,~~ operation within the LCO limits for DOSE EQUIVALENT I-131 **and DOSE EQUIVALENT XE-133** ~~gross specific activity are~~ **is** necessary to ~~contain~~ **limit** the potential consequences of an **a SLB or** SGTR to within the ~~acceptable site boundary dose values~~.

Insert 11

Insert 12

~~For operation in MODE 3 with RCS average temperature < 500°F, and in MODES 4 and 5, the offsite release of radioactivity from the affected SG in the event of a SGTR is unlikely since the saturation pressure of the reactor coolant is below the lift pressure settings of the main steam safety and relief valves.~~

ACTIONS

A.1 and A.2

Insert 13

A Note permits the use of the provisions of LCO 3.0.4.c. This allowance permits entry into the applicable MODE(S) while relying on ~~the ACTIONS~~. 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.

With the DOSE EQUIVALENT I-131 greater than the LCO limit, samples at intervals of 4 hours must be taken to demonstrate that the ~~limits of Figure 3.4.16-1 are not exceeded~~ **specific activity is ≤ [60.0] µCi/gm**. The Completion Time of 4 hours is **required** ~~allowed~~ to obtain and analyze a sample. Sampling is **done to** continued to provide a trend.

Insert 14

The DOSE EQUIVALENT I-131 must be restored to within limits within 48 hours. The Completion Time of 48 hours is ~~allowed to permit recovery, if the limit violation resulted from normal iodine spiking~~.

(continued)

BASES

ACTIONS (continued)

Insert 15

~~With the gross specific activity in excess of the allowed limit, the unit must be placed in a MODE in which the requirement does not apply.~~

Insert 16

~~The change within 6 hours to MODE 3 and RCS average temperature < 500°F lowers the saturation pressure of the reactor coolant below the setpoints of the main steam safety valves and prevents venting the affected SG to the environment in an SGTR event. The allowed Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 below 500°F from full power conditions in an orderly manner and without challenging plant systems.~~

B.1

C.1 **and C.2**

If **the** a Required Action and the associated Completion Time of Condition A **or B** is not met, or if the DOSE EQUIVALENT I-131 is **≥ [60.0] µCi/gm** ~~in the unacceptable region of Figure 3.4.16-1~~, the reactor must be brought to MODE 3 ~~with RCS average temperature < 500°F~~ within 6 hours **and MODE 5 within 36 hours**. The **allowed** Completion Time**s** ~~of 6 hours is~~ **are** reasonable, based on operating experience, to reach ~~MODE 3 below 500°F~~ from full power conditions in an orderly manner and without challenging plant systems.

Insert 17

SURVEILLANCE REQUIREMENTS

SR 3.4.16.1

SR 3.4.16.1 requires performing a gamma isotopic analysis as a measure of the **noble gas** ~~gross~~ specific activity of the reactor coolant at least once every 7 days. ~~While basically a quantitative measure of radionuclides with half lives longer than 10 minutes, excluding iodines,~~ **T**this measurement is the sum of the degassed ~~beta~~-gamma activit**iesy** and the ~~total of all identified~~ gaseous **gamma** activities in the sample ~~within two hours after the sample is taken and extrapolated back to when the sample was~~ taken. ~~Determination of the contributors to the gross specific activity shall be based upon those energy peaks identifiable with a 95% confidence level. The latest available data may be used for pure beta-emitting radionuclides.~~ This Surveillance provides an indication of any increase in **the noble gas** ~~gross~~ 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 Surveillance is applicable in MODES 1 and 2, and in MODE 3 with Tavg at least 500°F.~~ The 7 day Frequency considers the unlikelihood of a gross fuel failure during the time.

Insert 18

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.4.16.2

~~This Surveillance is modified by a Note. The Note modifies the surveillance to allow entry into and operation in MODE 3 ≥ 500°F and MODE 2 prior to performing this Surveillance Requirement.~~

This Surveillance is performed to ensure iodine **specific activity** remains within **the LCO** limit during normal operation and following fast power changes when **iodine spiking** ~~fuel failure~~ is more apt to occur. The 14 day Frequency is adequate to trend changes in the iodine activity level, considering **noble gas** ~~gross~~ activity is monitored every 7 days. The Frequency, between 2 and 6 hours after a power change ≥ 15% RTP within a 1 hour period, is established because the iodine levels peak during this time following **iodine spike initiation** ~~fuel failure~~; samples at other times would provide ~~less indicative~~ inaccurate results.

Insert 19

~~SR 3.4.16.3~~

~~A radiochemical analysis for $\bar{E}$ determination is required every 184 days (6 months) with the plant operating in MODE 1 equilibrium (as defined in SR 3.4.16.3 NOTE) conditions. The $\bar{E}$ determination directly relates to the LCO and is required to verify plant operation within the specified gross activity LCO limit. The analysis for $\bar{E}$ is the qualitative measurement of the specific activity for each radionuclide, except for radionuclides with half-lives less than 10 minutes and all radioiodines which are identified in the reactor coolant. The specific activity for these individual radionuclides shall be used in the determination of $\bar{E}$ for the reactor coolant sample. Determination of the contributors to $\bar{E}$ shall be based upon those energy peaks identifiable with a 95% confidence level. The Frequency of 184 days recognizes $\bar{E}$ does not change rapidly.~~

~~This SR has been modified by a Note that indicates sampling for $\bar{E}$ determination is required to be performed within 31 days after a minimum of 2 effective full power days and 20 days of MODE 1 operation have elapsed since the reactor was last subcritical for at least 48 hours. This ensures that the radioactive materials are at equilibrium so the analysis for $\bar{E}$ is representative and not skewed by a crud burst or other similar abnormal event.~~

REFERENCES

1. [10CFR100.11, 1973.]

2. [Standard Review Plan (SRP), Section 6.4 (SLB and SGTR control room dose limits), Section 15.1.5 Appendix A (SLB offsite dose limits) and Section 15.6.3 (SGTR offsite dose limits)]

3~~2~~. FSAR, Section[s 15.4.3 and 15.5.20.]

4. FSAR Section [15.1.5]

TS BASES INSERTS

Insert 1.

or at the low population zone outer boundary for the radiological release duration,

Insert 2.

Doses to the control room operators must be limited per GDC 19.

Insert 3.

DOSE EQUIVALENT XE-133.

Insert 4.

ensure that offsite and control room doses meet the appropriate acceptance criteria in the [Standard Review Plan (Ref. 2)]

Insert 5.

meet the appropriate [SRP] acceptance criteria following a SLB or

Insert 6.

the rate of release of iodine from the fuel rods containing cladding defects to the primary coolant immediately after a SLB [(by a factor of 500) or SGTR (by a factor of 500 or 335 for the SGTR analysis exclusion area boundary calculation)], respectively.

Insert 7.

specific activity is assumed to be [651] μCi/gm DOSE EQUIVALENT XE-133.

Insert 8.

and the RHR system is placed in service.

Insert 9.

in the reactor coolant

TS BASES INSERTS (continued)

Insert 10.

noble gas specific activity in the reactor coolant is limited to [600.0] μCi/gm DOSE EQUIVALENT XE-133, as contained in SR 3.4.16.2 and SR 3.4.16.1 respectively. The limits on specific activity ensure that offsite and control room doses will meet the appropriate [SRP] acceptance criteria (Ref. 2).

Insert 11.

[SRP] acceptance criteria (Ref. 2).

Insert 12.

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.

Insert 13.

Required Actions A.1 and A.2 while the DOSE EQUIVALENT I-131 LCO limit is not met.

Insert 14.

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.

Insert 15.

With the DOSE EQUIVALENT XE-133 in excess of the allowed limit, DOSE EQUIVALENT XE-133 must be restored to within limits 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.

TS BASES INSERTS (continued)

Insert 16.

A Note permits the use of the provisions of LCO 3.0.4c. This allowance permits entry into the applicable MODE(S), relying on Required Action B.1 while the DOSE EQUIVALENT XE-133 LCO limit 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.

Insert 17.

the required plant conditions

Insert 18.

If a specific noble gas nuclide listed in the definition of DOSE EQUIVALENT XE-133 in Specification 1.1, "Definitions," is not detected, it should be assumed to be present at the minimum detectable activity.

The Note modifies this SR to allow entry into and operation in MODE 4, MODE 3, and MODE 2 prior to performing the SR. This allows the Surveillance to be performed in those MODES, prior to entering MODE 1.

Insert 19.

The Note modifies this SR to allow entry into and operation in MODE 4, MODE 3, and MODE 2 prior to performing the SR. This allows the Surveillance to be performed in those MODES, prior to entering MODE 1.