

April 13, 2010

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

Serial No. 10-188  
LIC/GOR/R0  
Docket No.: 50-305  
License No.: DPR-43

**DOMINION ENERGY KEWAUNEE, INC.**  
**KEWAUNEE POWER STATION**  
**LICENSE AMENDMENT REQUEST 249 (TAC NO. ME02467) CONVERSION TO**  
**IMPROVED TECHNICAL SPECIFICATIONS RESPONSE TO REQUEST FOR**  
**ADDITIONAL INFORMATION RE: TSTF-490**

Pursuant to 10 CFR 50.90, Dominion Energy Kewaunee, Inc. (DEK) requested an amendment to Facility Operating License Number DPR-43 for Kewaunee Power Station (Kewaunee) (Reference 1). This License Amendment Request (LAR-249) would revise Kewaunee's current Technical Specifications (CTS) to Improved Technical Specifications (ITS) consistent with the Improved Standard Technical Specifications (ISTS) described in NUREG 1431, "Standard Technical Specifications - Westinghouse Plants," Revision 3.0. This letter provides the DEK response to an NRC staff request for additional information (RAI) (reference 2).

In Reference 1, DEK proposed adoption of Technical Specification Task Force (TSTF) traveler TSTF-490-A, "Deletion of E Bar Definition and Revision to RCS Specific Activity Tech Spec," Revision 0 (TSTF-490) into the Kewaunee ITS. DEK marked-up the proposed ITS pages accordingly. The adoption of TSTF-490-A would revise the current KPS Technical Specification definition of Dose Equivalent I-131, delete the definition of "E Bar," (Average Disintegration Energy), add a new definition for Dose Equivalent Xe-133, and revise LCO 3.4.16, "RCS Specific Activity."

During the review of DEK's LAR-249 submittal, the NRC staff requested additional information related to adoption of TSTF-490-A (reference 2). DEK's response to this RAI is attached to this letter. Based on DEK's review of this RAI, DEK determined changes were necessary to the proposed technical specifications, technical specification bases, discussion of changes, and the justification for deviations submitted in LAR 249. Enclosed with this letter are the additional proposed changes to those documents. The newly proposed changes are integrated into the changes originally submitted in LAR 249 (Reference 1). These changes will be reflected in the supplement to this section of the ITS conversion amendment.

Dominion continues to request approval of the proposed amendment and an implementation period as stated in Reference 1. In addition, the information contained

A001  
NRR



References:

1. Letter from Leslie N. Hartz (DEK) to Document Control Desk (NRC), "License Amendment Request 249: Kewaunee Power Station Conversion to Improved Technical Specifications (TAC NO. ME02467)," dated August 24, 2009. [ADAMS Accession No's ML092440371, ML092440416 through ML092440435, and ML092440441]
2. Email from Peter Tam (NRC) to Jack Gadzala (et al) (DEK), "Kewaunee - Draft RAI re. TSTF-490-A in ITS conversion amendment (TAC ME2139)," dated March 11, 2010. [ADAMS Accession No. ML100700300]

Attachment:

1. Response to NRC Staff Request for Additional Information Regarding Incorporation of TSTF-490-A in ITS Conversion Amendment (TAC ME2139)

Enclosure

1. Proposed Changes to LAR 249 TS, TS Bases, Discussion of Changes, and Justifications for Deviation

Commitments made by this letter: None

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**ATTACHMENT 1**

**LICENSE AMENDMENT REQUEST 249: KEWAUNEE POWER STATION  
CONVERSION TO IMPROVED TECHNICAL SPECIFICATIONS (TAC NO. ME02467)**

**RESPONSE TO NRC STAFF REQUEST FOR ADDITIONAL INFORMATION  
REGARDING INCORPORATION OF TSTF-490-A IN ITS CONVERSION  
AMENDMENT (TAC ME2139)**

**KEWAUNEE POWER STATION  
DOMINION ENERGY KEWAUNEE, INC.**

**Response to NRC Staff Request For Additional Information Regarding  
Incorporation of TSTF-490-A in ITS Conversion Amendment (TAC ME2139)**

**1.0 NRC Staff Questions**

"The NRC staff is reviewing Dominion Energy Kewaunee's application to convert the current Kewaunee custom Tech Spec into the Improved Standard Tech Spec (ITS) format. As part of its review, the NRC staff has determined that additional information, set forth below, is needed to complete its review of the issue regarding the proposed adoption of TSTF-490-A.

1. In the subject license amendment application, the licensee proposed to adopt industry standard technical specifications which include proposed Limiting Condition for Operation (LCO) 3.4.16, "RCS Specific Activity," APPLICABILITY requirements to specify that the LCO is applicable in MODES 1, 2, 3, and 4. In accordance with this proposal, the licensee also proposed to add the NOTE that states, "Only required to be performed in MODE 1" to the surveillance requirements of the TS, thus removing the applicability of the surveillance requirements to other MODES.

The NRC staff has a concern about the proposed addition of the aforementioned NOTE. The proposed change revises the conditions for sampling, and may exclude sampling during the plant conditions where LCO 3.4.16 may be exceeded. After transient conditions (i.e. reactor trip, plant depressurization, shutdown or startup) that end in MODES 2, 3, or 4, the SR is not required to be performed. Isotopic spiking and fuel failures are more likely during transient conditions than during steady-state plant operations.

Because LCO 3.4.16 could potentially be exceeded after plant transient or power changes, please justify why sampling is no longer needed in the plant MODES that are proposed to be eliminated and justify how the LCO 3.4.16 remains consistent with the design bases analysis from which the LCO limits are derived (i.e. main steamline break, steam generator tube rupture, etc.). Furthermore, please justify why there is an apparent disparity between the modes of applicability (MODES 1, 2, 3, and 4) and the limited mode (MODE 1) under which the surveillance is required. In addition, please provide marked up TS pages identifying your proposed changes.

2. The licensee stated:

The Dose Conversion Factors used in the determination of DOSE EQUIVALENT I-131 AND Xe-133 are consistent with the Dose Conversion factors used in the applicable dose consequence analysis.

Consistent with the safety evaluation for TSTF-490, please confirm that the site-specific limits for both DEI and DEX, and the dose conversion factors (DCFs) used for the determination of DEI and DEX surveillances, are consistent with the current

design-basis radiological dose consequence analyses (i.e. steam generator tube rupture and main steamline break). Also, for both DEI and DEX, please provide the information necessary (dose conversion factors and reactor coolant system radioisotopic concentrations) for the NRC staff to verify the proposed value in the LCO. In addition, please provide marked up TS pages identifying your proposed changes.”

## 2.0 DEK Responses

### NRC Question 1

Even though Surveillance Requirements (SR) 3.4.16.1 and 3.4.16.2 do not explicitly require the SR to be performed in MODES 2, 3, and 4, these surveillance requirements are still required to be met during all Modes of Applicability (MODES 1, 2, 3, and 4) in accordance with SR 3.0.1. If at any time during MODES 1 through 4 there is information or plant indication that SR 3.4.16.1 or SR 3.4.16.2 may not be met, they are required to be performed to ensure there is not a failure to meet the LCO.

However, after additional discussion with industry representatives on the TSTF committee and the NRC regarding the surveillance requirements and the Notes, DEK agrees with the removal of the proposed NOTE associated with SR 3.4.16.1 and SR 3.4.16.2. Thus, these surveillances will be explicitly required to be performed during all Modes of Applicability (MODES 1, 2, 3, and 4), which will ensure the potential consequences of a steam line break or steam generator tube rupture are bounded by the approved accident analysis. Accordingly, the TS surveillances are revised to eliminate the proposed Note in SR 3.4.16.1 and delete the existing Note in SR 3.4.16.2 as shown in Enclosure 1.

### NRC Question 2

#### Dose Equivalent Iodine (DEI)

Although Kewaunee is licensed to 10 CFR 50.67, the station is maintaining the current dose conversion factors in the definition of Dose Equivalent I-131 (DEI-131). The current definition of dose equivalent I-131 allows dose equivalent iodine (DEI) to be calculated using ratios based on the International Commission on Radiological Protection (ICRP)-30 (Reference 1). These ratios are the dose conversion factors (DCFs) as listed in Kewaunee TS 1.0.p, “DOSE EQUIVALENT I-131.”

Kewaunee TS 1.0.p defines DEI, including the table of thyroid conversion factors, as shown below.

p. DOSE EQUIVALENT I-131

DOSE EQUIVALENT I-131 is that concentration of I-131 ( $\mu\text{Ci}/\text{gram}$ ) 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 as listed and calculated based on dose conversion factors derived from ICRP-30.

DOSE CONVERSION FACTOR	ISOTOPE
1.0000	I-131
0.0059	I-132
0.1692	I-133
0.0010	I-134
0.0293	I-135

The current analyses of record for Kewaunee were approved by License Amendment 190, dated March 8, 2007 (Reference 2). This analysis referenced the isotopic activity associated with DEI listed in Kewaunee License Amendment Request (LAR) 195 (Reference 3). Using the above TS conversion factors with the RCS activity from LAR 195 (see Table 6.7-5 on page 40/141) yields 1.0  $\mu\text{Ci}/\text{gm}$  DEI, as shown in the following table.

Isotope	DCF ratios from TS 1.0.p	LAR 195 Table 6.7-5 RCS Activity ( $\mu\text{Ci}/\text{gm}$ )	DEI-131 ( $\mu\text{Ci}/\text{gm}$ )
I-131	1.0000	0.780	0.780
I-132	0.0059	0.793	0.005
I-133	0.1692	1.164	0.197
I-134	0.0010	0.161	0.000
I-135	0.0293	0.637	0.019
TOTAL DEI-131			<b>1.00</b>

Kewaunee LAR-195 and License Amendment 190 discuss the acceptability for the pre-accident and concurrent iodine spike source terms being based on ICRP-30 DCFs and the doses being calculated using Federal Guidance Report No. 11 (FGR-11) (Reference 4). RG 1.183 (Reference 5) requires that the pre-accident and concurrent iodine spikes used in design basis analyses be based on the maximum value permitted by Technical Specifications. The Kewaunee main steam line break (MSLB) and steam generator tube rupture (SGTR) accidents are analyzed using the maximum



reactor coolant system activity. Dose conversion factors from FGR-11 are used to calculate the Total Effective Dose Equivalent consequences described using the guidance from RG 1.183 while the 1  $\mu\text{Ci/gm}$  DEI inventory is calculated using TS 1.0.p dose conversion factors (DCF). TS 1.0.p DCFs result in a lower total allowable iodine inventory in the RCS than would be allowed using FGR-11 DCFs. Kewaunee License Amendment 172 (Reference 6) approved the use of DCFs from TS 1.0.p to perform the Technical Specification surveillance for DEI. The station DEI surveillance uses TS 1.0.p DCFs.

### Dose Equivalent Xenon (DEX)

The DCFs used to determine dose from noble gases and the calculation of dose equivalent Xe-133 (DEX) are from Federal Guidance Report No. 12 (FGR-12) (Reference 7). DEX is 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 will be assumed present at the minimum detectable activity. The calculation of DEX is shown below.

<b>KPS Design Basis DE Xe-133 based on FGR-12 DCFs</b>				
	Column 1	Column 2	Column 3	Column 4
Nuclide	FGR 12 DCF (Sv-m <sup>3</sup> /Bq-sec)	AST Primary Coolant Noble gas Concentrations ( $\mu\text{Ci/gm}$ )	Xe-133 DCF (Sv-m <sup>3</sup> /Bq-sec)	DE Xe-133 Col.(1)xCol.(2)=Col.(3) ( $\mu\text{Ci/gm}$ )
Kr-85	1.19E-16	8.60E+00	1.56E-15	6.56E-01
Kr-85m	7.48E-15	1.73E+00	1.56E-15	8.30E+00
Kr-87	4.12E-14	1.13E+00	1.56E-15	2.98E+01
Kr-88	1.02E-13	3.28E+00	1.56E-15	2.14E+02
Xe-131m	3.89E-16	3.04E+00	1.56E-15	7.58E-01
Xe-133m	1.37E-15	3.44E+00	1.56E-15	3.02E+00
Xe-133	1.56E-15	2.42E+02	1.56E-15	2.42E+02
Xe-135m	2.04E-14	5.01E-01	1.56E-15	6.55E+00
Xe-135	1.19E-14	8.69E+00	1.56E-15	6.63E+01
Xe-138	5.77E-14	6.28E-01	1.56E-15	2.32E+01
<b>Total DE Xe-133 (<math>\mu\text{Ci/gm}</math>) RCS Specific Activity Indicator</b>				<b>5.95E+02</b>

Column 1 above lists the DCFs from FGR-12. Column 2 lists the RCS concentrations for noble gas isotopes used in the alternate source term (AST) analyses, which is based on 1% fuel defects. Column 3 is a normalization factor. Values from columns 1 and 2 are multiplied, then normalized to the Xe-133 DCF, (Col (1) x Col (2) / Col (3)) and the

result displayed in Column 4. The values in Column 4 are summed to determine the DEX limit.

Example: Xe-133 Dose Equivalent of Kr-85 (DEX-Kr-85):

$$\text{DEX Kr-85} = 1.19\text{E-}16 \times 8.06\text{E+}00 / 1.56\text{E-}15 = 6.56\text{E-}01.$$

$$\left( \frac{\text{Sv} - \text{m}^3}{\text{Bq} - \text{sec}} \right) \times \left( \frac{\mu\text{Ci}}{\text{gm}} \right) = \left( \frac{\mu\text{Ci}}{\text{gm}} \right)$$

References:

1. International Commission on Radiation Protection (ICRP), "Limits for Intakes of Radionuclides by Workers," ICRP Publication 30, 1978
2. Letter from Robert F. Kuntz (NRC) to David A. Christian (DEK), "Kewaunee Power Station - Issuance of Amendment Re: Radiological Accident Analysis and Associated Technical Specifications Change (TAC No. MC9715)," dated March 8, 2007. [ADAMS Accession No. ML070430020]
3. Letter from Thomas Coutu (NMC) to Document Control Desk (NRC), "License Amendment Request 195, Application for Stretch Power Uprate for Kewaunee Nuclear Power Plant," dated May 22, 2003. [ADAMS Accession No. ML031540080 and ML031530424 pg 40/141]
4. Federal Guidance Report No. 11, "Limiting Values of Radionuclide Intake and Air Concentration and Dose Conversion Factors for Inhalation, Submersion, and Ingestion," 1989.
5. Regulatory Guide 1.183, "Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors," dated July 2000. [ADAMS Accession No. ML 003716792]
6. Letter from John G. Lamb (NRC) to Thomas Coutu (NMC), "Kewaunee Nuclear Power Plant - Issuance of Amendment Regarding Stretch Power Uprate (TAC NO. MB9031)," dated February 17, 2004. [ADAMS Accession No. ML040610669]
7. Federal Guidance Report No. 12, "External Exposure to Radionuclides in Air, Water, and Soil," 1993.

**ENCLOSURE 1**

**LICENSE AMENDMENT REQUEST 249: KEWAUNEE POWER STATION  
CONVERSION TO IMPROVED TECHNICAL SPECIFICATIONS (TAC NO. ME02467)**

**PROPOSED CHANGES TO LAR 249 TS, TS BASES, DISCUSSION OF CHANGES,  
AND JUSTIFICATIONS FOR DEVIATION**

**KEWAUNEE POWER STATION  
DOMINION ENERGY KEWAUNEE, INC.**

**TABLE TS 4.1-2**  
**MINIMUM FREQUENCIES FOR SAMPLING TESTS**

SAMPLING TESTS	TEST	FREQUENCY
1. Reactor Coolant Samples	a. Gross Radioactivity Determination (excluding tritium)	5/week <sup>(1)</sup> <small>Every 7 days</small>
	b. DOSE EQUIVALENT I-131 Concentration	1/14 days <sup>(2)</sup>
	c. Tritium activity	Monthly
	d. Chemistry (Cl, F, O <sub>2</sub> ) <sup>(3)</sup>	3/week <sup>(4)</sup>
	e. E Determination	1/6 months <sup>(5)</sup>
	f. RCS isotopic analysis for Iodine	Once per 4 hours in accordance with TS 3.1.c.2.C.
2. Reactor Coolant Boron <sup>(6)</sup>	Boron Concentration <sup>(3)</sup>	2/week

SR 3.4.16.1  
SR 3.4.16.2

DOSE EQUIVALENT XE-133 specific activity

See CTS 3.1.e

L02

M02

Required Action A1

See ITS 3.1.1 and ITS 3.9.1

L01

Add proposed SR 3.4.16.2 second Frequency

M02

SR 3.4.16.2 Note

L01

- <sup>(1)</sup> Maximum time between tests is 3 days.
- <sup>(2)</sup> Sample required only when in the OPERATING MODE.
- <sup>(3)</sup> Test required in all plant modes.
- <sup>(4)</sup> Maximum time between tests is 4 days.
- <sup>(5)</sup> Sample after a minimum of 2 EFPD and 20 days of OPERATING MODE operation have elapsed since the reactor was last subcritical for ≥ 48 hours.
- <sup>(6)</sup> A reactor coolant boron concentration sample does not have to be taken when the core is completely unloaded.

See ITS 3.1.1, ITS 3.9.1 and CTS 3.1.e

See CTS 3.1.e

See ITS 3.9.1

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**DISCUSSION OF CHANGES**  
**ITS 3.4.16, RCS SPECIFIC ACTIVITY**

the DOSE EQUIVALENT I-131 > 1.0  $\mu\text{Ci/gm}$  for < 48 hours. This change is administrative since it does not result in any technical changes to the CTS.

MORE RESTRICTIVE CHANGES

- M01 CTS 3.1.c.2 essentially requires that the specific activity of the reactor coolant shall be limited whenever the reactor is critical or the average coolant temperature is > 500°F. ITS 3.4.16 Applicability, with TSTF-490-A incorporated, requires the RCS DOSE EQUIVALENT I-131 and RCS DOSE EQUIVALENT XE-133 specific activity to be within limits during MODES 1, 2, 3 and 4. In addition, when a unit shutdown is required by CTS 3.1.c.2.A and CTS 3.1.c.2.B, the CTS requires the unit to be in INTERMEDIATE SHUTDOWN with an average coolant temperature of < 500°F within 6 hours. ITS 3.4.16 Required Action C.1 requires the unit to be in MODE 3 within 6 hours and Required Action C.2 requires the unit to be in MODE 5 within 36 hours. This changes the CTS by applying the LCO in more MODES in ITS than in CTS and by adding commensurate Required Actions to exit the new Applicability. The change that deletes the E-bar requirement and replace it with a DOSE EQUIVALENT XE-133 requirement is discussed in DOC L01.

The purpose of CTS 3.1.c is to ensure that the specific activity of the RCS is within the assumptions of the Main Steam Line Break (MSLB) and Steam Generator Tube Rupture (SGTR) analyses. This change is acceptable because the requirements continue to ensure that the process variables are maintained in the MODES and other specified conditions assumed in the safety analyses and licensing basis. The CTS Applicability is "whenever the reactor is critical or the average coolant temperature is > 500°F". The reactor is considered critical in the OPERATING (ITS equivalent MODE 1) and HOT STANDBY (ITS equivalent MODE 2) MODES. The reactor coolant temperature ranges of HOT SHUTDOWN (ITS equivalent MODE 3) is  $\geq 540^\circ\text{F}$  and INTERMEDIATE SHUTDOWN (ITS equivalent MODE 4) is  $> 200^\circ\text{F}$  and  $< 540^\circ\text{F}$ . However, the MODE reactor coolant temperature ranges of CTS are not equivalent to those of ITS. The reactor coolant temperature range of ITS MODE 3 is  $\geq 350^\circ\text{F}$  and of ITS MODE 4 is  $> 200^\circ\text{F}$  and  $< 350^\circ\text{F}$ . As a result of the differences in the temperature ranges between the MODE definitions of CTS and ITS, the CTS Applicability of "the average reactor coolant temperature of > 500°F" is attainable in equivalent ITS MODES 1, 2, and 3 but not in ITS MODE 4. Therefore, the ITS 3.4.16 Applicability of MODES 1, 2, 3, and 4 is more restrictive than the CTS Applicability. During operation with RCS Tavg < 500°F, the release of activity is minimal should a steam generator tube rupture occur since the saturation pressure of the reactor coolant is below the lift pressure of the main steam safety valves. This condition is satisfied once the unit enters ITS MODE 3. Furthermore, the proposed Required Actions for when a unit shutdown are required ensure the LCO Applicability is exited. This change is designated as more restrictive because the Applicability is applicable in more MODES than in CTS and commensurate actions to exit the proposed Applicability have been added.

- M02 CTS Table TS 4.1-2 Item 1.b requires the performance of a DOSE EQUIVALENT I-131 concentration test of the reactor coolant sample every 14 days. ITS

**DISCUSSION OF CHANGES**  
**ITS 3.4.16, RCS SPECIFIC ACTIVITY**

SR 3.4.16.2 requires verification of reactor coolant DOSE EQUIVALENT I-131 specific activity be  $\leq 1.0 \mu\text{Ci/gm}$  every 14 days and between 2 and 6 hours after a THERMAL POWER change of  $\geq 15\%$  RTP within a 1 hour period. This changes the CTS by adding a new Surveillance Requirement Frequency

and deleting the allowance to only perform the 14 day routine Surveillance when in MODE 1

The purpose of ITS SR 3.4.16.2 is to verify the reactor coolant DOSE EQUIVALENT I-131 specific activity is within the assumptions of the accident (MSLB and SGTR) analyses. 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 is more apt to occur. The proposed 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. This change is more restrictive because a new SR Frequency has been added

conditional

following a spike

and an allowance to only perform the routine 14 day Surveillance when in MODE 1 has been deleted.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

None

LESS RESTRICTIVE CHANGES

- L01 (Category 1 – Relaxation of LCO Requirements) CTS 3.1.c.1.B requires the gross radioactivity due to nuclides with half-lives  $> 30$  minutes excluding tritium to be  $\leq 91/\bar{E} \mu\text{Ci/cc}$ . CTS 3.1.c.2.B states that if the limit is not met, then the unit must be shut down to INTERMEDIATE SHUTDOWN with an average coolant temperature  $< 500^\circ\text{F}$  within 6 hours – no restoration time prior to the shutdown is provided. Furthermore, if the limit is not met, CTS 3.1.c.2.C requires the sample and analysis requirements of Table TS 4.1-2, item 1.f (an isotopic analysis for iodine), to be performed every 4 hours. Table TS 4.1-2, Item 1.a, requires a gross radioactivity determination (excluding tritium) 5 times per week, with a maximum time between tests of 3 days and item 1.e requires an  $\bar{E}$  determination every 6 months with the sample being required after a minimum of 2 EFPD and 20 days of OPERATING MODE operation have elapsed since the reactor was last subcritical for  $\geq 48$  hours. ITS 3.4.16 does not include any requirements related to  $\bar{E}$ . ITS LCO 3.4.16 requires the DOSE EQUIVALENT XE-133 limit to be met. SR 3.4.16.1 states that the DOSE EQUIVALENT XE-133 must be  $\leq 595 \mu\text{Ci/gm}$  and requires verification of this limit every 7 days when in MODE 1. If DOSE EQUIVALENT XE-133 is not within the limit, ITS 3.4.16 ACTION B provides 48 hours to restore the DOSE EQUIVALENT XE-133 to within its limit prior to requiring a unit shutdown. It also allows LCO 3.0.4.c to be applicable when in ACTION B. Furthermore, when DOSE EQUIVALENT XE-133 is not within its limit, the ITS does not require the isotopic analysis for iodine to be performed every 4 hours. This changes the CTS by deleting the  $\bar{E}$  requirements

CTS

All changes are  
unless otherwise noted

TSTF-490-A

RCS Specific Activity  
3.4.16

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>3.1.c.2.A, 3.1.c.2.B</p> <p>C. Required Action and associated Completion Time of Condition A, not met.</p> <p style="text-align: center;">or B</p> <p><u>OR</u></p> <p>DOSE EQUIVALENT I-131 in the unacceptable region of Figure 3.4.16-1.</p>	<p>C.1 Be in MODE 3 with <math>T_{avg} &lt; 500^{\circ}F</math>.</p> <p style="text-align: center;">AND</p> <p>C.2 Be in MODE 5.</p> <p style="text-align: center;">&gt; [60] <math>\mu Ci/gm</math></p> <p style="text-align: center;">20</p>	<p>6 hours</p> <p style="text-align: center;">36 hours</p>

1

Reviewer Note: The Note will stay added in, then will be deleted by JFD 2.

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>Table TS 4.1-2, Item 1.a</p> <p>SR 3.4.16.1</p> <p>Verify reactor coolant gross specific activity <math>\leq 100/E \mu Ci/gm</math>.</p> <p>Verify reactor coolant DOSE EQUIVALENT XE-133 specific activity <math>\leq [280] \mu Ci/gm</math>.</p>	<p>7 days</p>
<p>Table TS 4.1-2, Item 1.b</p> <p>SR 3.4.16.2</p> <p style="text-align: center;">NOTE Only required to be performed in MODE 1.</p>	<p>595</p>
<p>Verify reactor coolant DOSE EQUIVALENT I-131 specific activity <math>\leq [1.0] \mu Ci/gm</math>.</p>	<p>14 days</p> <p><u>AND</u></p> <p>Between 2 and 6 hours after a THERMAL POWER change of <math>\geq 15\%</math> RTP within a 1 hour period</p>

2

1

2

1

DOC M02

**JUSTIFICATION FOR DEVIATIONS  
ITS 3.4.16, RCS SPECIFIC ACTIVITY**

1. The ISTS contains bracketed information and/or values that are generic to all Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is provided. This is acceptable since the generic specific information/value is revised to reflect the current plant design.

← Insert JFD 2



INSERT JFD 2

2. The allowance that SR 3.4.16.1 and SR 3.4.16.2 only have to be performed in MODE 1 has been deleted, per DEK response to an NRC RAI (see letter with serial number 10-188).

All changes are  
unless otherwise noted

TSTF-490-A

RCS Specific Activity  
B 3.4.16

BASES

SURVEILLANCE REQUIREMENTS (continued)

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  $T_{avg}$  at least 500°F. The 7 day Frequency considers the unlikelyhood of a gross fuel failure during the time.

low probability

INSERT 13

SR 3.4.16.2

iodine spiking

the LCO

specific activity

noble gas

7

This Surveillance is performed in MODE 1 only to ensure iodine remains within limit during normal operation and following fast power changes when fuel failure is more apt to occur. The 14 day Frequency is adequate to trend changes in the iodine activity level, considering gross activity is monitored every 7 days. 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 fuel failure; samples at other times would provide inaccurate results.

iodine spike initiation

INSERT 14

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 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 a measurement of the average energies per disintegration for isotopes with half lives longer than 15 minutes, excluding iodines. The Frequency of 184 days recognizes  $\bar{E}$  does not change rapidly.

This SR has been modified by a Note that indicates sampling 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. 10 CFR 100.11, 1973.
2. FSAR, Section [15.6.3].

INSERT 15

TSTF-490-A **INSERT 13**

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 SR 3.4.16.1 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.

A Note modifies the 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.

7

Reviewer Note: The Note descriptions will stay added in, then will be deleted by JFD 7.

TSTF-490-A **INSERT 14**

The Note modifies the 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.

7

TSTF-490-A **INSERT 15**

----- Reviewer's Note -----  
 The first listed References 1 and 2 are for plants that are licensed to 10 CFR 100.11. The second set of References are for plants that are licensed to 10 CFR 50.67.

2

[ 1. 10 CFR 100.11.

1

2. Standard Review Plan (SRP) Section 15.1.5 Appendix A (SLB) and Section 15.6.3 (SGTR).

1

1. 10 CFR 50.67.

2. Standard Review Plan (SRP) Section 15.0.1 "Radiological Consequence Analyses Using Alternate Source Terms."

3 1

3. SAR, Section 15.1.5 ← 14.2.4

Regulatory Guide 1.183, July 2000.

3 1

4. SAR, Section 15.6.3 ← 14.2.5

3 1

**JUSTIFICATION FOR DEVIATIONS  
ITS 3.4.16 BASES, RCS SPECIFIC ACTIVITY**

1. The ISTS contains bracketed information and/or values that are generic to all Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is provided. This is acceptable since the generic specific information/value is revised to reflect the current plant design.
2. TSTF-490-A, Revision 0, contains an NRC Reviewer's Note. The NRC Reviewer's Note has been deleted. This information is for the NRC reviewer to be keyed in to what is needed to meet this requirement. The NRC Reviewer's Note is not meant to be retained in the final version of the plant specific submittal.
3. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.
4. Typographical error corrected.
5. ACTION A has two Required Actions. Not meeting either of the Required Actions results in entering ACTION C. Thus the word "the" has been replaced with "any".
6. ITS 3.4.7, which is applicable in MODE 5, allows the use of a steam generator as a backup method for decay heat removal. Therefore, the word "normally" has been added.



INSERT Bases JFD 7

INSERT bases JFD 7

7. The allowance that SR 3.4.16.1 and SR 3.4.16.2 only have to be performed in MODE 1 (i.e., "normal" operations) has been deleted, per DEK response to an NRC RAI (see letter with serial number 10-188).