



March 20, 2002
RC-02-0039

Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, DC 20555

Attention: Mr. G. E. Edison

Gentlemen:

Subject: VIRGIL C. SUMMER NUCLEAR STATION (VCSNS)
DOCKET NO. 50/395
OPERATING LICENSE NO. NPF-12
TECHNICAL SPECIFICATION CHANGE REQUEST TSP 01-0125
DOSE EQUIVALENT I-131

- References:
1. Westinghouse Nuclear Safety Advisory Letter NSAL-00-04,
Nonconservatism in Iodine Spiking Calculations, March 7, 2000
 2. NUREG-1431, *Standard Technical Specifications Westinghouse
Plants*, Revision 2, April 2001
 3. Nuclear Regulatory Issue Summary 2001-19, October 18, 2001

South Carolina Electric & Gas Company (SCE&G), acting for itself and as agent for South Carolina Public Service Authority, hereby requests an amendment to the Virgil C. Summer Nuclear Station (VCSNS) Technical Specifications (TS) in accordance with 10CFR50.90. This proposed amendment will revise Section 1.10 DEFINITIONS, DOSE EQUIVALENT I-131 in accordance with Reference 1 and Reference 2.

Reference 1 informed SCE&G that nonconservative assumptions may have been used in the calculation of the accident initiated iodine spiking rates in the primary coolant. The NSAL identified five parameters that may affect the iodine spike:

- Letdown flow rate
- Letdown demineralizer iodine removal efficiency
- Primary coolant leakage
- Uncertainty in letdown flow
- Primary coolant mass

Of these five, the letdown flow rate and the primary coolant mass were not applicable to VC Summer as they were properly addressed in the original analyses.

A001

The applicable accidents include the steam generator tube rupture, main steam line break and CVCS line rupture. The NSAL further identified recommended actions to minimize the impact of the change including the use of the International Commission on Radiological Protection, ICRP 30, iodine dose conversion factors. The change in the iodine dose spiking input assumptions per the NSAL with the use of the ICRP iodine dose conversion factors results in calculated offsite dose consequences which are less severe than those previously presented in the FSAR for these accidents.

The amendment request is contained in the following documents:

Attachment I	Explanation of Changes Summary Marked-up Technical Specification Pages Revised Technical Specification Pages
Attachment II	Safety Evaluation
Attachment III	No Significant Hazards Determination
Attachment IV	Environmental Impact Determination

This proposed TS amendment request has been reviewed by both the Plant Safety Review Committee and the Nuclear Safety Review Committee.

SCE&G requests NRC review and approval of this change to the VCSNS TS as expeditiously as possible.

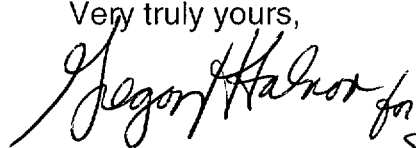
There are no other TS changes in process that will affect or be affected by this change request.

FSAR sections 15.3.7, 15.4.2.1.4 and Appendix 15A are revised as a result of this change. The FPER was reviewed but was not applicable.

A copy of this application and associated attachments is being provided to the designated South Carolina State official in accordance with 10 CFR 50.91.

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

Should you have questions, please call Mr. Jim Turkett at (803) 345-4047 or Mr. Lou Cartin at (803) 345-4728.

Very truly yours,

Stephen A. Byrne SAB

Attachment(s): 4

c: N. O. Lorick
N. S. Carns
T. G. Eppink (w/o Attachment)
R. J. White
L. A. Reyes
W. R. Higgins
NRC Resident Inspector
P. Ledbetter
K. M Sutton
T. P. O'Kelley
RTS (TSP 01-0125)
File (813.20)
DMS (RC-02-0039)

STATE OF SOUTH CAROLINA :
 :
COUNTY OF FAIRFIELD :

TO WIT :

I hereby certify that on the 20TH day of MARCH 2002, before me, the subscriber, a Notary Public of the State of South Carolina personally appeared Gregory H. Halnon, being duly sworn, and states that he has signature authority for the Vice President, Nuclear Operations of the South Carolina Electric & Gas Company, a corporation of the State of South Carolina, that he provides the foregoing response for the purposes therein set forth, that the statements made are true and correct to the best of his knowledge, information, and belief, and that he was authorized to provide the response on behalf of said Corporation.

WITNESS my Hand and Notarial Seal

James W. Turkett, Jr.
Notary Public

My Commission Expires

OCTOBER 2nd, 2010
Date

Attachment To License Amendment No. XXX
To Facility Operating License No. NPF-12
Docket No. 50-395

Replace the following pages of the Appendix A Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Remove Pages

Insert Pages

1-2

1-2

SCE&G -- EXPLANATION OF CHANGES

<u>Page</u>	<u>Affected Section</u>	<u>Bar #</u>	<u>Description of Change</u>	<u>Reason for Change</u>
1-2	1.10	1	Revise reference for iodine dose conversion factors from TID-14844 to ICRP 30.	To reflect use of ICRP 30 iodine dose conversion factors plant specific analyses.

DEFINITIONS

CONTAINMENT INTEGRITY

1.7 CONTAINMENT INTEGRITY shall exist when:

- a. All penetrations required to be closed during accident conditions are either:
 - 1) Capable of being closed by an OPERABLE containment automatic isolation valve system, or
 - 2) Closed by manual valves, blind flanges, or deactivated automatic valves secured in their closed positions, except for valves that are open under administrative control as permitted by Specification 3.6.4,
- b. All equipment hatches are closed and sealed,
- c. Each air lock is in compliance with the requirements of Specification 3.6.1.3,
- d. The containment leakage rates are within the limits of Specification 6.8.4.g, and
- e. The sealing mechanism associated with each penetration (e.g., welds, bellows, or O-rings) is OPERABLE.

CONTROLLED LEAKAGE

1.8 CONTROLLED LEAKAGE shall be that seal water flow supplied to the reactor coolant pump seals.

CORE ALTERATION

1.9 CORE ALTERATION shall be the movement of any fuel, sources, or reactivity control components within the reactor pressure vessel with the vessel head removed and fuel in the vessel. Suspension of CORE ALTERATION shall not preclude completion of movement of a component to a safe position.

CORE OPERATING LIMITS REPORT

1.9a The CORE OPERATING LIMITS REPORT (COLR) is the unit specific document that provides core operating limits for the current operating reload cycle. The cycle specific core operating limits shall be determined for each reload cycle in accordance with Specification 6.9.1.11. Plant operation within these operating limits is addressed in individual specifications.

DOSE EQUIVALENT I-131

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

ICRP 30, Supplement to PART 1, page 192-212, Table titled, "Committed Dose Equivalent in Target Organs or Tissues Per Intake of Unit Activity."

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**SAFETY EVALUATION
FOR REVISING
SECTION 1.10
OF THE VIRGIL C. SUMMER NUCLEAR STATION
TECHNICAL SPECIFICATIONS**

Description of Amendment Request

South Carolina Electric & Gas Company (SCE&G) proposes a change to the Virgil C. Summer Nuclear Station (VCSNS) Technical Specifications (TS) Definitions, Section 1.10, Dose Equivalent I-131. This proposed change will revise the iodine dose conversion factors used in determining the I-131 dose equivalent reactor coolant specific activity in Technical Specification 3/4.4.8 and in calculating the offsite dose consequences from postulated accidents which include iodine spiking as revised using changes in the accident initiated (concurrent) iodine dose spiking input assumptions based on the information provided in Westinghouse Nuclear Safety Advisory Letter NSAL-00-04. These accidents are the steam generator tube rupture as discussed in Technical Specification Bases, Section B3/4.4.8 and the main steam line break and CVCS line rupture. This change will revise the iodine dose conversion factors from the values in Technical Information Document, TID-14844, to those in International Commission on Radiological Protection, ICRP-30.

Safety Evaluation

References: 1. NUREG-1431, Revision 2
2. Westinghouse Nuclear Safety Advisory Letter NSAL-00-04, 3/7/2000

V. C. Summer TS Section 1.10, Definitions - Dose Equivalent I-131, states that thyroid dose conversion factors listed in TID-14844 shall be used in determining dose equivalent I-131 values. This proposed change revises this to reference the dose conversion factors provided in ICRP 30. This activity relates to TS sections, 3/4.8.8, B3/4.4.8 and 1.10. TS section 3/4.4.8 applicability is to the calculation of the I-131 dose equivalent reactor coolant specific activity. TS section B3/4.4.8 states that the limitation on the specific activity of the primary coolant ensures that the resulting 2 hour doses at the site boundary will not exceed an appropriately small fraction of Part 100 limits following a steam generator tube rupture accident. TS Section 1.10 defines the acceptable values for the iodine dose conversion factors. The use of ICRP 30 is consistent with the information contained in NUREG-1431, Revision 2, Standard Technical Specifications Westinghouse Plants, Section 1.1 Definitions which states that the iodine dose conversion factors for determining the dose equivalent I-131 shall be either the values in TID-14844 or USNRC Regulatory Guide 1.109 or ICRP 30. This use of the ICRP 30 iodine dose conversion factors is also endorsed by the NRC as

indicated in Nuclear Regulatory Issue Summary 2001-19, 10/18/01 wherein it is stated: "The NRC staff considers thyroid dose conversion factors based on ICRP 30, such as those tabulated in Federal Guidance Report 11, to be an acceptable change in methodology that does not warrant prior review."

This proposed change was initiated to address non-conservatisms in accident initiated (concurrent) iodine spiking rates used in the Chapter 15 accident analyses identified by Westinghouse in NSAL-00-04. The accident initiated iodine spiking rates are derived from the equilibrium iodine appearance rates into the reactor coolant.

Within NSAL-00-04, five areas of potential non-conservatisms were identified that affect the iodine appearance rates.

Area of Potential Non-Conservatisms Per NSAL-00-04	Assumption to Maximize The Iodine Appearance Rates	V. C. Summer Input Value Used
Letdown Flow Rate	Use maximum purification flow (i.e., maximum allowed letdown flow for normal operation)	Two letdown orifice in service (120 gpm)*
Letdown Demineralizer Iodine Removal Efficiency	Use highest decontamination factor (DF)	DF = ∞ (i.e., demineralizer removes all iodine from the purification flow)
Primary Coolant Leakage	Increase the purification flowrate to account for RCS Leakage	Technical Specification Limits for Identified plus Unidentified Leakage (11 gpm)*
Letdown Flow Uncertainty	Increase the purification flow to account for letdown flow uncertainty	10% Flow Uncertainty (12 gpm)*
Primary Coolant Mass	Use normal operating liquid volume (i.e., pressurizer not full)	8830 ft ³

* Total Purification Flow Used = 120 gpm + 11 gpm + 12 gpm = 143 gpm

Of these five, the letdown flow rate and the primary coolant mass were not applicable to VC Summer as they were properly addressed in the original analyses.

The applicable accidents include the steam generator tube rupture, main steam line break and CVCS line rupture. Use of the ICRP 30 iodine dose conversion factors combined with the change in the iodine dose spiking input assumptions per NSAL-00-04 results in calculated offsite dose consequences which are less severe than those previously presented in the FSAR for these accidents. Thyroid doses for the other accidents described in the FSAR will continue to be reported using the conservative TID 14844 iodine dose conversion factors until a future update is required.

This proposed change will also revise the iodine dose conversion factors used in determining reactor coolant dose equivalent I-131 specific activity in accordance with Technical Specification 3/4.4.8. The ICRP 30 dose conversion factors are consistent with current NRC criteria as stated in NUREG-1431 and do not result in any adverse affects.

**NO SIGNIFICANT HAZARDS DETERMINATION
FOR REVISING
SECTION 1.10
OF THE VIRGIL C. SUMMER NUCLEAR STATION
TECHNICAL SPECIFICATIONS**

Description of Amendment Request

South Carolina Electric & Gas Company (SCE&G) proposes a change to the Virgil C. Summer Nuclear Station (VCSNS) Technical Specifications (TS) Definitions, Section 1.10, Dose Equivalent I-131. This proposed change will revise the iodine dose conversion factors used in determining the I-131 dose equivalent reactor coolant specific activity in Technical Specification 3/4.4.8 and in calculating the offsite dose consequences from postulated accidents which include iodine spiking as revised using changes in the accident initiated (concurrent) iodine dose spiking input assumptions based on the information provided in Westinghouse Nuclear Safety Advisory Letter NSAL-00-04. These accidents are the steam generator tube rupture as discussed in Technical Specification Bases, Section B3/4.4.8 and the main steam line break and CVCS line rupture. This change will revise the iodine dose conversion factors from the values in Technical Information Document, TID-14844, to those in International Commission on Radiological Protection, ICRP-30.

Basis for No Significant Hazards Consideration Determination

South Carolina Electric & Gas Company (SCE&G) has evaluated the proposed changes to the VCSNS TS described above against the significant Hazards Criteria of 10CFR50.92 and has determined that the changes do not involve any significant hazard. The following is provided in support of this conclusion.

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

This proposed change revises the iodine dose conversion factors used in the determination of the dose equivalent I-131 reactor coolant specific activity and in the calculation of the offsite radiological consequences for those FSAR Chapter 15 accidents that include iodine spiking effects. The iodine dose conversion factors are changed from the values in TID-14844 to the values in ICRP 30, consistent with NUREG-1431. The accidents affected by this change are the steam generator tube rupture, main steam line break and CVCS line rupture. The proposed change also revises certain input assumptions (letdown demineralizer iodine removal efficiency, primary coolant leakage and uncertainty in letdown flow) used in determining the accident initiated (concurrent) iodine spiking source terms input to the offsite

radiological consequences calculations. The change in dose conversion factors and the input assumptions does not affect any normal operation or accident scenarios. There are no changes to any plant procedures or equipment that would relate to the probability of an accident. The change in the iodine spiking input assumptions identified in NSAL-00-04 results in an increase in the calculated offsite dose consequences for the steam generator tube rupture, main steam line break and CVCS line rupture. Use of the ICRP 30 iodine dose conversion factors offsets this increase such that the resulting calculated offsite dose consequences are less severe than those previously presented in the FSAR for the steam generator tube rupture, main steam line break and CVCS line rupture. The following table provides the current FSAR calculated doses compared to those obtained with the ICRP 30 dose conversion factors and the NSAL-00-04 iodine spiking input changes.

Accident	Current FSAR Thyroid Dose (EAB/LPZ) Rem	Revised Thyroid Dose (EAB/LPZ) Rem
Steam Generator Tube Rupture		
Pre-Accident Iodine Spike	53.5/13.3	39.8/9.9
Concurrent Iodine Spike	18.65/4.66	16.6/4.2
Main Steam Line Break		
Pre-Accident Iodine Spike	52.74/13.8	42.3/11.0
Concurrent Iodine Spike	9.01/6.53	7.37/5.84
CVCS Line Rupture	24.4/1.41	21.7/1.26

Thyroid doses for the other accidents described in the FSAR will continue to be reported using the conservative TID 14844 iodine dose conversion factors until a future update is required.

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

The proposed changes to Technical Specification 1.10, Definitions, Dose Equivalent I-131 and the use of the iodine spiking input assumptions listed in NSAL-00-04 does not introduce any new accident initiator mechanisms. The dose

conversion factors are used in determining the reactor coolant dose equivalent I-131 specific activity and in the calculation of offsite dose consequences for certain design basis accidents which include the effects of iodine spiking as revised based on the iodine spiking input changes (letdown demineralizer iodine removal efficiency, primary coolant leakage and uncertainty in letdown flow) provided in NSAL-00-04. No existing accident scenarios are affected and no new scenarios are created. The proposed change does not introduce alterations to system operations, changes to equipment operability or technical specification operability requirements, nor to Engineered Safety Features Actuation System instrumentation or setpoints. The proposed change does not revise any of the actual equipment or instrumentation in the plant nor does it change the actual alarm setpoints or information available to the operators to monitor Technical Specification commitments. It does not introduce any new or different failure mechanisms or limiting single failures. A new or different kind of accident is thus not created.

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

The proposed change to Technical Specification 1.10, Definitions, Dose Equivalent I-131 preserves the conclusions of plant safety analyses presented in the FSAR. This proposed change revises the iodine dose conversion factors used in the calculation of the potential offsite radiological consequences following those Chapter 15 accidents that include iodine spiking effects as revised based on the iodine spiking input changes provided in NSAL-00-04. The dose conversion factors are changed from the values in TID-14844 to the values in ICRP 30, consistent with the criteria in NUREG-1431. This activity relates to TS section B3/4.4.8 and TS section 1.10 Dose Equivalent I-131. TS section B3/4.4.8 states that the limitation on the specific activity of the primary coolant ensures that the resulting 2 hour doses at the site boundary will not exceed an appropriately small fraction of Part 100 limits following a steam generator tube rupture accident. TS Section 1.10 defines the acceptable values for the iodine dose conversion factors. The change in the accident initiated iodine spiking calculation input parameters identified in NSAL-00-04 results in an increase in the calculated offsite dose consequences for the steam generator tube rupture, main steam line break and CVCS line rupture. Use of the ICRP 30 iodine dose conversion factors offsets this increase such that the resulting calculated offsite dose consequences are less severe than those previously presented in the FSAR. Therefore, the margin of safety is not reduced.

Pursuant to 10 CFR 50.91, the preceding analyses provides a determination that the proposed Technical Specifications change poses no significant hazard as delineated by 10 CFR 50.92.

**ENVIRONMENTAL IMPACT DETERMINATION
FOR REVISING
SECTION 1.10
OF THE VIRGIL C. SUMMER NUCLEAR STATION
TECHNICAL SPECIFICATIONS**

Environmental Assessment

This proposed Technical Specification change has been evaluated against criteria for and identification of licensing and regulatory actions requiring environmental assessment in accordance with 10 CFR 51.21. It has been determined that the proposed change meets the criteria for categorical exclusion as provided for under 10 CFR 51.22(c)(9). The following is a discussion of how the proposed Technical Specification change meets the criteria for categorical exclusion.

10 CFR 51.22(c)(9): The proposed change involves change to the iodine dose conversion factors used to determine the Dose Equivalent I-131 reactor coolant specific activity,

- (i) the proposed change involves No Significance Hazards Consideration (refer to No Significance Hazards Evaluation);
- (ii) there are no significant changes in the types or significant increase in the amounts of any effluents that may be released offsite since the proposed change does not affect the generation of any radioactive effluents nor does it affect any of the permitted release paths; and
- (iii) there is no significant increase in individual or cumulative occupational radiation exposure.

Accordingly, the proposed change meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Based on the aforementioned information and pursuant to 10 CFR 51.22(b), no environmental assessment or environmental impact statement need be prepared in connection with issuance of an amendment to the Technical Specifications incorporating the proposed change.