

Stephen A. Byrne
Senior Vice President, Nuclear Operations
803.345 4622



February 25, 2003
RC-03-0040

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

Attention: Ms. K. R. Cotton

Ladies and Gentlemen:

Subject: VIRGIL C. SUMMER NUCLEAR STATION
DOCKET NO. 50/395
OPERATING LICENSE NO. NPF-12
LICENSE AMENDMENT REQUEST LAR 00-0173,
REVISION TO ENGINEERED SAFETY FEATURE ACTUATION SYSTEM
INSTRUMENTATION TABLES WITHDRAWAL REQUEST AND RESUBMITTAL

Reference: S. A. Byrne (SCE&G) to Document Control Desk, RC-02-0112, dated June 27,
2002 (TSP 00-0032)

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). This request is being submitted pursuant to 10 CFR 50.90. This letter requests the withdrawal of the above referenced letter and resubmits this amendment request. Changes to the referenced amendment request have been identified with a revision bar in the margin.

The proposed changes will add an allowed outage time for Engineered Safety Features Actuation System Instrumentation channels to be out of service in a bypassed state. These are the channels that are energized to actuate and are currently permitted by TS to be placed in a bypassed state indefinitely. Specifically, these are the level channels for the Refueling Water Storage Tank (RWST) that initiate the semi-automatic swap-over to the Reactor Building recirculation sumps; the pressure channels in the suction piping to the Emergency Feedwater pumps (EFW) that initiate the swap-over to the safety-related source of water; and the Reactor Building pressure channels that initiate the containment spray system.

The purpose for requesting this change is to resolve a condition where, due to a newly determined single failure consideration, the above functions may not automatically occur when needed. This would only occur if one or more functions had one channel in bypass with a coincident Design Basis Accident and a specific direct current power failure. Currently, the VCSNS TS permit the placing of one inoperable channel per function in bypass, for an indefinite period of time. This condition was identified in Licensee Event Report 50/395 2000-004-00.

A001

This amendment request will provide a limitation on the amount of time any of the above channels may be placed in bypass. Page 3/4 3-23, ACTION STATEMENT 16 will state that an inoperable channel may be placed in bypass for no more than 6 hours, otherwise the channel would have to be placed in the tripped condition or the plant would have to shut down. This change will bring the VCSNS TS into conformance with the Westinghouse improved standardized Technical Specifications - NUREG 1431, Revision 2.

This proposed amendment will also revise TS 3/4.3.2, Tables 3.3-3 and 3.3-4 to incorporate consistent applicability and action for Engineered Safety Feature Actuation System (ESFAS) Instrumentation, Functional Unit 5.b. (Automatic Actuation Logic and Actuation Relay) Turbine Trip and Feedwater Isolation. This change will provide consistency between Tables 3.3-3, 3.3-4 and 4.3-2 and will be similar to the equivalent requirement in NUREG-1431, Revision 2.

Additionally, Table 3.3-4, ESFAS Instrumentation Trip Setpoints, Functional Unit 4.e. (Steam Line Isolation - Steamline Pressure - Low) does not have a corresponding functional unit on Table 4.3-2, to assure that the surveillance requirements are being met. This administrative change to Functional Unit 4.e. is added to Table 4.3-2, to provide consistency with the surveillance requirements. The surveillance requirement is met by Functional Unit 1.f., however, this administrative change provides a one-for-one correlation between Tables 3.3-3, 3.3-4, and 4.3-2. SCE&G determined that an administrative change to add the surveillance requirements for Functional Unit 4.e. to Table 4.3-2 would resolve this discrepancy.

No change to the Bases section is required.

SCE&G desires that this amendment request be approved within 6 months. Currently these conditions addressed above are being prevented by use of administrative controls.

FSAR Sections 3.A, 6.2, 6.3, 7.2, 7.3, and 8.3 were reviewed. No changes have been identified as a result of this proposed TS change.

No commitments are being proposed in association with this change.

The TS amendment request is contained in the following attachments:

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

This proposed amendment has been reviewed and approved by the Plant Safety Review Committee and the Nuclear Safety Review Committee.

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Page 3 of 3

Should you have questions, please call Mr. Philip A. Rose at (803) 345-4052.

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

2/25/03

Executed on



Stephen A. Byrne
Senior Vice President, Nuclear Plant Operations

PAR/SAB/dr
Attachments (3)

c: N. O. Lorick
N. S. Carns
T. G. Eppink (w/o Attachment)
R. J. White
L. A. Reyes
K. R. Cotton
NRC Resident Inspector
Paulett Ledbetter
K. M. Sutton
T. P. O'Kelley
RTS (LAR 00-0173)
File (813.20)
DMS (RC-03-0040)

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.

<u>Remove Page</u>	<u>Insert Page</u>
3/4 3-20	3/4 3-20
3/4 3-23	3/4 3-23
3/4 3-24	3/4 3-24
3/4 3-28	3/4 3-28
3/4 3-37	3/4 3-37

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>
3/4 3-20	Table 3.3-3	1	Added Functional Unit 5.b., "Automatic Actuation Logic and Actuation Relay" to TURBINE TRIP AND FEEDWATER ISOLATION Unit.	Determined that Table 3.3-3 will be conservatively considered to include Functional Unit 5.b., to provide consistency with Tables 3.3-4 and 4.3-2, similar to NUREG-1431, Revision 2.
3/4 3-23	Table 3.3-3 Action Statement 16	1	Adding Allowed Outage Time to ACTION STATEMENT 16.	LER 2000-004-00 commitment.
	Action Statement 19.b	2	Removed "s" from requirement.	Typographical error made in original issuance of TS.
3/4 3-24	Action Statement 24	1	Removed "s" from requirement.	Typographical error made in TS Amendment 101.
	Table 3.3-3	2	Added ACTION STATEMENT 25 to describe action for inoperable channels of Functional Unit 5.b.	Same reason for change as Page 3/4 3-20 above.
3/4 3-28	Table 3.3-4	1	Added Functional Unit 5.b., "Automatic Actuation Logic and Actuation Relay" to TURBINE TRIP AND FEEDWATER ISOLATION Unit.	Same reason for change as Page 3/4 3-20 above.
3/4 3-37	Table 4.3-2	1	Added Functional Unit 4.e., "Steam Line Pressure Low" to STEAMLIN ISOLATION.	Identified that this Surveillance Requirement is missing from Table 4.3-2, even though the requirement is being performed under the Surveillance Requirement for Functional Unit 1.f.

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION


<u>FUNCTIONAL UNIT</u>	<u>TOTAL NO. OF CHANNELS</u>	<u>CHANNELS TO TRIP</u>	<u>MINIMUM CHANNELS OPERABLE</u>	<u>APPLICABLE MODES</u>	<u>ACTION</u>
e. Steam Line Pressure-Low	1 pressure/loop	1 pressure any 2 loops	1 pressure any 2 loops	1, 2, 3 ^{##,###}	24* 
5. TURBINE TRIP & FEEDWATER ISOLATION					
a. Steam Generator Water Level-- High-High	3/loop	2/loop in any operating loop	2/loop in each operating loop	1, 2	24*
<i>b. Automatic Actvation Logic and Actuation RELAY</i>	<i>2</i>	<i>1</i>	<i>2</i>	<i>1, 2</i>	<i>25</i>

TABLE 3 3-3 (Continued)

TABLE NOTATION

- # Trip function may be blocked in this MODE below the P-11 (Pressurizer Pressure Interlock) setpoint.
- ** Trip function may be blocked in this MODE below the P-12 (Low-Low T_{avg} Interlock) setpoint.
- *** Except when below P-12 with all MSIVs and bypasses closed and disabled.
- * The provisions of Specification 3.0.4 are not applicable.

ACTION STATEMENTS

ACTION 14 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 6 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours; however, one channel may be bypassed for up to 4 hours for surveillance testing per Specification 4.3.2.1, provided the other channel is OPERABLE.

ACTION 15 - DELETED

Replace
with
Insert
1

~~ACTION 16 - With the number of OPERABLE channels one less than the Total Number of Channels operation may proceed provided the inoperable channel is placed in the bypassed condition and the Minimum Channels OPERABLE requirement is met. One additional channel may be bypassed for up to 4 hours for surveillance testing per Specification 4.3.2.1.~~

ACTION 17 - With less than the Minimum Channels OPERABLE requirement, operation may continue provided the containment purge supply and exhaust valves are maintained closed.

ACTION 18 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 48 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

ACTION 19 - With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided the following conditions are satisfied:

- a. The inoperable channel is placed in the tripped condition within 1 hour.
- b. The Minimum Channels OPERABLE requirements is met; however, the inoperable channel may be bypassed for up to 2 hours for surveillance testing of other channels per Specification 4.3.2.1.

TABLE 3.3-3 (Continued)

ACTION STATEMENTS (Continued)

- ACTION 20 - With less than the Minimum Number of Channels OPERABLE, within one hour determine by observation of the associated permissive annunciator window(s) that the interlock is in its required state for the existing plant condition, or apply Specification 3.0.3.
- ACTION 21 - With the number of OPERABLE Channels one less than the Minimum Channels OPERABLE requirement, restore the inoperable channels to OPERABLE status within 6 hours or be in at least HOT STANDBY within the next 6 hours and in at least HOT SHUTDOWN within the following 6 hours; however, one channel may be bypassed for up to 4 hours for surveillance testing per Specification 4.3.2.1 provided the other channel is OPERABLE.
- ACTION 22 - With the number of OPERABLE channels one less than the Total Number of Channels, restore the inoperable channel to OPERABLE status within 48 hours or be in at least HOT STANDBY within 6 hours and in at least HOT SHUTDOWN within the following 6 hours.
- ACTION 23 - With the number of OPERABLE channels one less than the Total Number of Channels, restore the inoperable channel to OPERABLE status within 48 hours or declare the associated valve inoperable and take the ACTION required by Specification 3.7.1.5.
- ACTION 24 - With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided the following conditions are satisfied:
- a. The inoperable channel is placed in the tripped condition within 6 hours.
 - b. The Minimum Channels OPERABLE requirements is met; however, the inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels per Specification 4.3.2.1.

Insert 2 →

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

SUMMER - UNIT 1

3/4 3-28

Amendment No. ~~78~~, ~~79~~, ~~11~~

	<u>Functional Unit</u>	<u>Trip Setpoint</u>	<u>Allowable Value</u>
5.	TURBINE TRIP AND FEEDWATER ISOLATION		
	a. Steam Generator Water Level - High-High Barton Transmitter Rosemount Transmitter	$\leq 79.2\%$ of span $\leq 79.2\%$ of span	$\leq 81.0\%$ of span $\leq 81.0\%$ of span
6	EMERGENCY FEEDWATER		
	a. Manual	NA	NA
	b. Automatic Actuation Logic	NA	NA
	c. Steam Generator Water Level - Low-Low Barton Transmitter Rosemount Transmitter	$\geq 27.0\%$ of span $\geq 27.0\%$ of span	$\geq 26.1\%$ of span $\geq 25.7\%$ of span
	d. & f. Undervoltage-ESF Bus	≥ 5760 Volts with a ≤ 0.25 second time delay ≥ 6576 Volts with a ≤ 3.0 second time delay	≥ 5652 Volts with a ≤ 0.275 second time delay ≥ 6511 Volts with a ≤ 3.3 second time delay

b. Automatic Actuation Logic NA NA

SUMMER - UNIT 1

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	ANALOG CHANNEL OPERATIONAL TEST	TRIP ACTUATING DEVICE OPERATIONAL TEST	ACTUATION LOGIC TEST	MASTER RELAY TEST	SLAVE RELAY TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
4. STEAM LINE ISOLATION								
a. Manual	N.A.	N.A.	NA.	R	N.A.	N.A.	N.A.	1, 2, 3
b. Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	N.A.	N.A.	M(1)	M(1)	Q	1, 2, 3
c. Reactor Building Pressure-High-2	S	R	Q	N.A.	N.A.	N.A.	N.A.	1, 2, 3
d. Steam Flow in Two Steam Lines--High Coincident With T _{avg} --Low-Low	S	R	Q	N.A.	N.A.	N.A.	N.A.	1, 2, 3
	S	R	Q	N.A.	N.A.	N.A.	N.A.	1, 2, 3
5. TURBINE TRIP AND FEEDWATER ISOLATION								
a. Steam Generator Water Level--High-High	S	R	Q	N.A.	N.A.	N.A.	N.A.	1, 2
b. Automatic Actuation Logic and Actuation Relay	N.A.	N.A.	N.A.	N.A.	M(1)	M(1)	Q	1, 2
6. EMERGENCY FEEDWATER								
a. Manual	N.A.	N.A.	N.A.	R	N.A.	N.A.	N.A.	1, 2, 3
b. Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	N.A.	N.A.	M(1)	M(1)	Q	1, 2, 3
c. Steam Generator Water Level--Low-Low	S	R	Q	N.A.	N.A.	N.A.	N.A.	1, 2, 3
e. Steam Line Pressure Low	S	R	Q	N.A.	N.A.	N.A.	N.A.	1, 2, 3

3/4 3-37

Amendment No. 55, 101

Insert 1

ACTION 16 - With the number of OPERABLE channels one less than the Total Number of Channels, operation may continue provided the inoperable channel is placed in bypass and the Minimum Channels OPERABLE requirement is met and restore the inoperable channel to OPERABLE status within 6 hours otherwise;

Place the affected channel in trip within the following hour

Or

Be in at least HOT STANDBY within the next 6 hours and
in COLD SHUTDOWN within the following 30 hours.

One additional channel may be bypassed for up to 4 hours
for surveillance testing per Specification 4.3.2.1.

Insert 2

ACTION 25 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, restore the inoperable Channels to OPERABLE status within 6 hours or be in HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the next 30 hours; however, one channel may be bypassed for up to 4 hours for surveillance testing per Specification 4.3.2.1, provided the other channel is OPERABLE.

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

<u>FUNCTIONAL UNIT</u>	<u>TOTAL NO. OF CHANNELS</u>	<u>CHANNELS TO TRIP</u>	<u>MINIMUM CHANNELS OPERABLE</u>	<u>APPLICABLE MODES</u>	<u>ACTION</u>
e. Steam Line Pressure-Low	1 pressure/loop	1 pressure any 2 loops	1 pressure any 2 loops	1, 2, 3 ^{##,###}	24*
5. TURBINE TRIP & FEEDWATER ISOLATION					
a. Steam Generator Water Level--High-High	3/loop	2/loop in any operating loop	2/loop in each operating loop	1, 2	24*
b. Automatic Actuation Logic and Actuation Relay	2	1	2	1, 2	25

TABLE 3.3-3 (Continued)

TABLE NOTATION

- # Trip function may be blocked in this MODE below the P-11 (Pressurizer Pressure Interlock) setpoint.
- ## Trip function may be blocked in this MODE below the P-12 (Low-Low T_{avg} Interlock) setpoint.
- ### Except when below P-12 with all MSIVs and bypasses closed and disabled.
- * The provisions of Specification 3.0.4 are not applicable.

ACTION STATEMENTS

ACTION 14 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 6 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours; however, one channel may be bypassed for up to 4 hours for surveillance testing per Specification 4.3.2.1, provided the other channel is OPERABLE.

ACTION 15 - DELETED

ACTION 16 - With the number of OPERABLE channels one less than the Total Number of Channels, operation may continue provided the inoperable channel is placed in bypass and the Minimum Channels OPERABLE requirement is met and restore the inoperable channel to OPERABLE status within 6 hours otherwise;

Place the affected channel in trip within the following hour

Or

Be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

One additional channel may be bypassed for up to 4 hours for surveillance testing per Specification 4.3.2.1.

ACTION 17 - With less than the Minimum Channels OPERABLE requirement, operation may continue provided the containment purge supply and exhaust valves are maintained closed.

ACTION 18 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 48 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

ACTION 19 - With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided the following conditions are satisfied:

- a. The inoperable channel is placed in the tripped condition within 1 hour.
- b. The Minimum Channels OPERABLE requirements is met; however, the inoperable channel may be bypassed for up to 2 hours for surveillance testing of other channels per Specification 4 3.2.1.

TABLE 3.3-3 (Continued)

ACTION STATEMENTS (Continued)

- ACTION 20 - With less than the Minimum Number of Channels OPERABLE, within one hour determine by observation of the associated permissive annunciator window(s) that the interlock is in its required state for the existing plant condition, or apply Specification 3.0.3.
- ACTION 21 - With the number of OPERABLE Channels one less than the Minimum Channels OPERABLE requirement, restore the inoperable channels to OPERABLE status within 6 hours or be in at least HOT STANDBY within the next 6 hours and in at least HOT SHUTDOWN within the following 6 hours; however, one channel may be bypassed for up to 4 hours for surveillance testing per Specification 4.3.2.1 provided the other channel is OPERABLE.
- ACTION 22 - With the number of OPERABLE channels one less than the Total Number of Channels, restore the inoperable channel to OPERABLE status within 48 hours or be in at least HOT STANDBY within 6 hours and in at least HOT SHUTDOWN within the following 6 hours.
- ACTION 23 - With the number of OPERABLE channels one less than the Total Number of Channels, restore the inoperable channel to OPERABLE status within 48 hours or declare the associated valve inoperable and take the ACTION required by Specification 3.7.1.5.
- ACTION 24 - With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided the following conditions are satisfied:
- a. The inoperable channel is placed in the tripped condition within 6 hours.
 - b. The Minimum Channels OPERABLE requirement is met; however, the inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels per Specification 4.3.2.1.
- ACTION 25 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, restore the inoperable Channels to OPERABLE status within 6 hours or be in HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the next 30 hours; however, one channel may be bypassed for up to 4 hours for surveillance testing per Specification 4.3.2.1, provided the other channel is OPERABLE.

SUMMER - UNIT 1

3/4 3-28

Amendment No. 40, 119, 120,

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

	<u>Functional Unit</u>	<u>Trip Setpoint</u>	<u>Allowable Value</u>
5.	TURBINE TRIP AND FEEDWATER ISOLATION		
	a. Steam Generator Water Level - High-High Barton Transmitter Rosemount Transmitter	$\leq 79.2\%$ of span $\leq 79.2\%$ of span	$\leq 81.0\%$ of span $\leq 81.0\%$ of span
	b. Automatic Actuation Logic	NA	NA
6.	EMERGENCY FEEDWATER		
	a. Manual	NA	NA
	b. Automatic Actuation Logic	NA	NA
	c. Steam Generator Water Level - Low-Low Barton Transmitter Rosemount Transmitter	$\geq 27.0\%$ of span $\geq 27.0\%$ of span	$\geq 26.1\%$ of span $\geq 25.7\%$ of span
	d. & f. Undervoltage-ESF Bus	≥ 5760 Volts with a ≤ 0.25 second time delay ≥ 6576 Volts with a ≤ 3.0 second time delay	≥ 5652 Volts with a ≤ 0.275 second time delay ≥ 6511 Volts with a ≤ 3.3 second time delay

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

<u>FUNCTIONAL UNIT</u>	<u>CHANNEL CHECK</u>	<u>CHANNEL CALIBRATION</u>	<u>ANALOG CHANNEL OPERATIONAL TEST</u>	<u>TRIP ACTUATING DEVICE OPERATIONAL TEST</u>	<u>ACTUATION LOGIC TEST</u>	<u>MASTER RELAY TEST</u>	<u>SLAVE RELAY TEST</u>	<u>MODES FOR WHICH SURVEILLANCE IS REQUIRED</u>
4. STEAM LINE ISOLATION								
a. Manual	N.A.	N.A.	N.A.	R	N.A.	N.A.	N.A.	1, 2, 3
b. Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	N.A.	N.A.	M(1)	M(1)	Q	1, 2, 3
c. Reactor Building Pressure-High-2	S	R	Q	N.A.	N.A.	N.A.	N.A.	1, 2, 3
d. Steam Flow in Two Steam Lines--High Coincident with T _{avg} --Low-Low	S	R	Q	N.A.	N.A.	N.A.	N.A.	1, 2, 3
e. Steam Line Pressure Low	S	R	Q	N.A.	N.A.	N.A.	N.A.	1, 2, 3
5. TURBINE TRIP AND FEEDWATER ISOLATION								
a. Steam Generator Water Level--High-High	S	R	Q	N.A.	N.A.	N.A.	N.A.	1, 2
b. Automatic Actuation Logic and Actuation Relay	N.A.	N.A.	N.A.	N.A.	M(1)	M(1)	Q	1, 2
6. EMERGENCY FEEDWATER								
a. Manual	N.A.	N.A.	N.A.	R	N.A.	N.A.	N.A.	1, 2, 3
b. Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	N.A.	N.A.	M(1)	M(1)	Q	1, 2, 3
c. Steam Generator Water Level--Low-Low	S	R	Q	N.A.	N.A.	N.A.	N.A.	1, 2, 3

**SAFETY EVALUATION
FOR REVISING ENGINEERED SAFETY FEATURES
ACTUATION SYSTEM INSTRUMENTATION TABLES
IN THE VIRGIL C. SUMMER NUCLEAR STATION
TECHNICAL SPECIFICATIONS**

Description of Amendment Request

The Virgil C. Summer Nuclear Station (VCSNS) Technical Specifications (TS) are being revised to add an Allowed Outage Time (AOT) to Table 3.3-3, Engineered Safety Features Actuation System (ESFAS) instrumentation, ACTION STATEMENT 16. Licensee Event Report 50/395 2000-004-00 described a scenario where a condition could occur that would prevent the automatic actuation of the "energize to actuate" functions. This condition is, in part caused by the current action statement that allows specific instrumentation channels to be placed in bypass for an indefinite period of time. Establishing an AOT will assure the channels remain operable and permit single failure requirements to be satisfied. An option to follow a shut down requirement or a requirement to place the inoperable channel in trip is being added to protect the plant in the event that a channel becomes inoperable and cannot be restored within the allotted time.

This proposed amendment would revise the VCSNS TS 3/4. 3.2 to incorporate consistent applicability and action for Functional Unit 5.b., Automatic Actuation Logic and Actuation Relay for Turbine Trip and Feedwater Isolation (P-14). This change adds ACTION STATEMENT 25 to help provide consistency. Currently, Table 4.3-2 has this Functional Unit, whereas Tables 3.3-3 and 3.3-4 do not identify this same Functional Unit. Additionally, an administrative change to Functional Unit 4.e. is added to Table 4.3-2, to provide consistency with the surveillance requirements. These requirements are currently met by Functional Unit 1.f., however, this administrative change provides a one-for-one correspondence between Tables 3.3-3, 3.3-4, and 4.3-2. No change to the Bases section is required.

Background

LER 2000-004-00 provided written notification of single failure vulnerability due to a deficiency in the current Limiting Condition for Operability for Engineered Safety Feature Actuation System (ESFAS) instrumentation. For one inoperable channel in the Emergency Feedwater suction swap-over on low suction pressure, Refueling Water Storage Tank (RWST) to Reactor Building Recirculation sump swap-over on lo-lo level, or Containment Spray actuation on High-3 building pressure, the Technical Specification (TS) requirement is to place the channel in bypass. There is no completion or restoration time specified.

During a design basis accident, a single failure involving a loss of power to the opposite train instrumentation, while one or more of these channels were in bypass would prevent the safety function from automatically occurring. This condition is the result of the safety related 120 VDC power supply configuration of the plant. VCS only has two 120 VDC power sources, one for each train. In this configuration, a loss of a 120 VDC bus will disable its associated train. Since these instrument loops are energize to actuate (to prevent spurious actuation) the available logic will not be satisfied and the automatic actuation will not occur. The logic scheme is 2 out of 4 (2 out of 3 with a channel in bypass). This is not a concern with other instrument loops in the plant, as they fail in the safe position.

Administrative controls were established to prevent or minimize the amount of time one of these channels would be in the bypassed condition, with 72 hours being the Allowed Outage Time (AOT).

Evaluations stemming from Westinghouse Technical Bulletin ESBUTB-97-09-R0 and several Condition Evaluation Reports determined that there was no functional unit in Tables 3.3-3 and 3.3-4 to correspond to 5.b. in Table 4.3-2. This meant that if the surveillance performed indicated an unsatisfactory condition, there was no action statement to provide guidance to the plant. Administrative controls were enacted to provide guidance should the plant ever be in this situation. ACTION STATEMENT 25 is being added to this Table per the guidance located in NRC Administrative Letter 98-10.

Similarly, a discrepancy was discovered between these same tables for Functional Unit 4.e., STEAM LINE ISOLATION – Steam Line Pressure Low. In this case, the discrepancy was identified on a Condition Evaluation Report. Functional Unit 4.e. was located in Tables 3.3-3 and 3.3-4 but had no corresponding Surveillance Requirement in Table 4.3-2. This was not a concern since an identical Surveillance Requirement is located in Functional Unit 1.f. Administrative controls were also enacted to assure consistency and provide the redundant requirement with this Functional Unit.

Safety Evaluation

Normally, when a TS required system or component is inoperable, there is a specific time period that it is permitted to remain inoperable before other actions are required to be performed to assure the plant can satisfy the design basis. During this time period, a licensee does not have to postulate a single failure coincident with the design basis accident (DBA) due to the limited time the system is inoperable and the low probability of the DBA occurring. This philosophy follows the guidance of Generic Letter 80-30, IEEE 279-1979, and ANSI 58.9-1981. Without the established time period, this guidance should not be applied.

Providing a specified time period will bring the plant into conformance with the design basis. An AOT of 6 hours was determined to be an acceptable time period to restore the channel or take the required action. A review of plant operating logs had shown that there have not been any of these channels in bypass for longer than 20 hours within the last 7 years. Additionally, there is never a loss of operator action from the control room to manually actuate the required component(s). Procedural guidance located in Emergency Operating Procedures requires that all expected automatic Engineered Safety Features actuations be verified or be manually actuated if the automatic actuation does not occur as expected.

The plant specific PSA calculation performed for LER 2000-004-00 evaluated the probability and consequences of this condition and concluded that this event has a very low probability of occurrence. The following assumptions were made and documented in this calculation:

- A Condition IV DBA coincident with a loss of offsite power.
- One channel from each of the “energize to actuate” functions were bypassed for greater than one year.
- A loss of the opposite train DC power prior to the start of its associated Emergency Diesel Generator.

The PSA model for VCSNS takes no credit for the Emergency Feedwater suction swap-over; meaning that this is not a contributor to core damage from a risk significance view point. However, the other two functions are modeled and the resulting core damage frequency change is $2.4 \text{ E-}8$ with the associated Large Early Release Frequency change being $1.7 \text{ E-}10$. These numbers demonstrate that there is a very low probability of the DBA occurring while the plant is in this configuration and the consequences are non-significant. Therefore, 6 hours is more than adequate to ensure that the plant is maintained in a safe configuration.

Table 4.3-2, Engineered Safety Feature Actuation System Instrumentation Surveillance Requirements, applicability, and action for Functional Unit 5.b., Automatic Actuation Logic and Actuation Relay are not reflected in Tables 3.3-3 and 3.3-4. This is a conservative change, to reflect the consistent application of Functional Unit 5.b. Tables 3.3-3 and 3.3-4 will include Functional Unit 5.b.; which is also consistent with the Improved Technical Specifications, NUREG-1431, Rev. 2.

There were no physical or procedural changes to reflect the addition of Functional Unit 5.b., Automatic Actuation Logic and Actuation Relay associated with the Turbine Trip & Feedwater Isolation ESFAS Instrumentation. There are no changes made by additional conservative actions taken in the event of a loss this functional unit.

The change provides consistent control by including an AOT limit for TS 3/4 3.2, Table 3.3-3, Functional Unit 5.b. through adding ACTION STATEMENT 25. This is a more conservative application of the actions taken in the event of an inoperable functional unit. The basis for the 6 hour AOT is based on the other train being operable and the low probability of an event occurring during this interval.

These actions provide an additional conservatism to the existing TS by placing a further restriction on the ESFAS Instrumentation, Instrumentation Trip Setpoints and Instrumentation Surveillance Requirements: TS 3/4 3.2, Table 3.3-3, by adding items 5.b. and Action 25, Table 3.3-4, by adding item 5.b., and Table 4.3-2, by adding item 4.e.

Since the LCO and Setpoint requirements are identical for both pressure transmitter functional units and are initiated by the "A" bistable in each instrument loop, the addition of Functional Unit 4.e. to Table 4.3-2 is merely a repetition of the surveillance requirements and is therefore an administrative change only.

The addition of Functional Unit 4.e is administrative in that there already exists a TS requirement that assures this function is tested at the correct frequency. The Surveillance Test Procedure for Functional Unit 1.f verifies the correct response for both functional units. This change is to preclude confusion when comparing the setpoint Table (3.3-4) and the Surveillance Requirements Table (4.3-2).

Additionally, Table 3.3-3, Engineered Safety Feature Actuation System Instrumentation applicability, action, and surveillance requirements for Functional Unit 1.f., Steam Line Pressure - Low are duplicated in Functional Unit 4.e., Steam Line Pressure - Low.

Table 3.3-4, Engineered Safety Feature Actuation System Instrumentation Trip Setpoints specify identical Trip Setpoints of ≥ 675 psig and Allowable Values of ≥ 635 psig for these same functional units, respectively. Table 4.3-2, Engineered Safety Feature Actuation System Instrumentation Surveillance Requirements, Functional Unit 1.f., Steam Line Pressure Low, specifies the functional parameters to be tested and the intervals for test performance.

FSAR Sections 3.A, 6.2, 6.3, 7.2, 7.3, and 8.3 were reviewed. No changes have been identified as a result of this proposed TS change. The FPER was reviewed but not applicable. These reviews also demonstrated there are no changes made to the facility by further restricting the actions taken in the event of a loss of Functional Units 5.b. or 4.e. These changes provide an administrative control for consistency and conservatism and do not make any changes as described in the FSAR/FPER.

The proposed changes impose more restrictive operating limitations, and their use provides increased assurance that the ESFAS Instrumentation remains operable.

NO SIGNIFICANT HAZARDS EVALUATION
FOR REVISING ENGINEERED SAFETY FEATURES
ACTUATION SYSTEM INSTRUMENTATION TABLES
IN THE VIRGIL C. SUMMER NUCLEAR STATION
TECHNICAL SPECIFICATIONS

Description of Amendment Request

The Virgil C. Summer Nuclear Station (VCSNS) Technical Specifications (TS) are being revised to add an Allowed Outage Time (AOT) to Table 3.3-3, Engineered Safety Features Actuation System (ESFAS) instrumentation, ACTION STATEMENT 16. Licensee Event Report 50/395 2000-004-00 described a scenario where a condition could occur that would prevent the automatic actuation of the "energize to actuate" functions. This condition is, in part caused by the current action statement that allows specific instrumentation channels to be placed in bypass for an indefinite period of time. Establishing an AOT will assure the channels remain operable and permit single failure requirements to be satisfied. An option to follow a shut down requirement or a requirement to place the inoperable channel in trip is being added to protect the plant in the event that a channel becomes inoperable and cannot be restored within the allotted time.

This proposed amendment would revise the VCSNS TS 3/4. 3.2 to incorporate consistent applicability and action for Functional Unit 5.b., Automatic Actuation Logic and Actuation Relay for Turbine Trip and Feedwater Isolation (P-14). This change adds ACTION STATEMENT 25 to help provide consistency. Currently, Table 4.3-2 has this Functional Unit, whereas Tables 3.3-3 and 3.3-4 do not identify this same Functional Unit. Additionally, an administrative change to Functional Unit 4.e. is added to Table 4.3-2, to provide consistency with the surveillance requirements. These requirements are currently met by Functional Unit 1.f., however, this administrative change provides a one-for-one correspondence between Tables 3.3-3, 3.3-4, and 4.3-2. No change to the Bases section is required.

Background

LER 2000-004-00 provided written notification of single failure vulnerability due to a deficiency in the current Limiting Condition for Operability for Engineered Safety Feature Actuation System (ESFAS) instrumentation. For one inoperable channel in the Emergency Feedwater suction swap-over on low suction pressure, Refueling Water Storage Tank (RWST) to Reactor Building Recirculation sump swap-over on lo-lo level, or Containment Spray actuation on High-3 building pressure, the Technical Specification (TS) requirement is to place the channel in bypass. There is no completion or restoration time specified.

During a design basis accident, a single failure involving a loss of power to the opposite train instrumentation, while one or more of these channels were in bypass would prevent the safety function from automatically occurring. This condition is the result of the safety related 120 VDC power supply configuration of the plant. VCS only has two 120 VDC power sources, one for each train. In this configuration, a loss of a 120 VDC bus will disable its associated train. Since these instrument loops are energize to actuate (to prevent spurious actuation) the available logic will not be satisfied and the automatic actuation will not occur. The logic scheme is 2 out of 4 (2 out of 3 with a channel in bypass). This is not a concern with other instrument loops in the plant, as they fail in the safe position.

Administrative controls were established to prevent or minimize the amount of time one of these channels would be in the bypassed condition, with 72 hours being the AOT.

Evaluations stemming from Westinghouse Technical Bulletin ESBU-TB-97-09-R0 and several Condition Evaluation Reports determined that there was no functional unit in Tables 3.3-3 and 3.3-4 to correspond to 5.b. in Table 4.3-2. This meant that if the surveillance performed indicated an unsatisfactory condition, there was no action statement to provide guidance to the plant. Administrative controls were enacted to provide guidance should the plant ever be in this situation. ACTION STATEMENT 25 is being added to this Table per the guidance located in NRC Administrative Letter 98-10.

Similarly, a discrepancy was discovered between these same tables for Functional Unit 4.e., STEAM LINE ISOLATION - Steam Line Pressure Low. In this case, the discrepancy was identified on a Condition Evaluation Report. Functional Unit 4.e. was located in Tables 3.3-3 and 3.3-4 but had no corresponding Surveillance Requirement in Table 4.3-2. This was not a concern since an identical Surveillance Requirement is located in Functional Unit 1.f. Administrative controls were also enacted to assure consistency and provide the redundant requirement with this Functional Unit.

Basis for No Significance 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 10 CFR 50.92 and has determined that the changes do not involve any significant hazard. The following is provided in support of this conclusion.

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

The addition of an ACTION STATEMENT and the addition of an AOT (and its associated actions if not met) for a TS action statement are neither an accident initiator nor precursor. The ESFAS actuates in response to an accident and has a mitigating function. Increasing the TS requirements for specific TS instrument loops provides additional assurance that the channels will be capable of performing their design function in the event of a DBA. The ability of the operations staff to respond to an evaluated accident or plant transient will not be hampered. This change provides conservative requirements to assure that the design basis of the plant is maintained.

Addition of conservative changes to the Engineered Safety Feature Actuation System Instrumentation does not contribute to the initiation of any accident evaluated in the FSAR. Supporting factors are as follows:

- The changes provide consistency between Tables 3.3-2, 3.3-3, and 4.3-2, resulting in a one-for-one correlation between the functional units in those tables. These changes are conservative and consistent with the Standard Technical Specifications, NUREG-1431, Rev. 2. There are no deletions from the Technical Specifications made by these changes, nor relaxation in any applicability, action, or surveillance requirements.
- Overall plant performance and operation is not altered by the proposed changes. There are to be no plant hardware changes as a result of this proposed change and only minimal procedural changes.

Therefore, since the Engineered Safety Feature Actuation System Instrumentation are treated more conservatively, the probability of occurrence or consequences of an accident evaluated in the VCSNS FSAR will be no greater than the original design basis of the plant.

Therefore, the change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

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

The proposed changes provide consistency between Tables 3.3-2, 3.3-3, and 4.3-2, resulting in a one-for-one correlation between the functional units in those tables. Additionally, the addition of an ACTION STATEMENT and an AOT with conservative requirements are intended to assure that the plant is in a safe configuration and can meet accident analyses assumptions. These changes are conservative and consistent with the Improved Technical Specifications, NUREG-1431, Rev. 2. No new accident initiator mechanisms are introduced since:

- No physical changes to the Engineered Safety Feature Actuation System Instrumentation are made.
- No deletions from the Technical Specifications are made.
- No relaxations in any applicability, action, or surveillance requirements are made.

Since the safety and design requirements continue to be met and the integrity of the reactor coolant system pressure boundary is not challenged, no new accident scenarios have been created. Therefore, the types of accidents defined in the FSAR continue to represent the credible spectrum of events to be analyzed, which determine safe plant operation.

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

The proposed change requires that an instrument channel for an Engineered Safety Feature remain operable or be restored to operability within a reasonable time period, otherwise a controlled shutdown is required. This conforms to the safety analysis where the plant and its systems, structures and components must be capable of performing the safety function while a DBA is occurring, in the presence of a worst case single failure.

This is not a reduction in a margin of safety, since it restores the margin that was designed into the plant.

The proposed changes provide consistency between Tables 3.3-2, 3.3-3, and 4.3-2, resulting in a one-for-one correlation between the functional units in those tables. These changes are conservative and consistent with the Standard Technical Specifications, NUREG-0452, Rev. 5.

The proposed changes impose more restrictive operating limitations, and their use provides increased assurance that the Engineered Safety Feature Actuation System Instrumentation remains operable. Since the changes are conservative additions, it is concluded that the changes do not involve a significant reduction in the margin of safety.

This is not a reduction in a margin of safety, since it restores the margin that was designed into the plant.

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 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): Although the proposed change involves change to requirements with respect to inspection, Surveillance, or Design Requirements,

- (i) The proposed change involves No Significance Hazards Consideration (refer to the No Significance Hazards Consideration Determination section of this Technical Specification Change Request);

Accordingly, the proposed change meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Based on the aforementioned 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.

Regulatory Assessment

Applicable Regulatory Requirements/Criteria

10 CFR 50.34(a) provides information on the types and level of detail required in the Preliminary Safety Analysis Report (PSAR). The requirement includes details on safety features that would have impact on the health and safety of the public. Also required are the details of the safety analysis that supports the assertion that the health and safety of the public is not adversely affected by the design and operation of the nuclear power plant.

The Preliminary Safety Analysis provided by SCE&G for the initial licensing of VCSNS did not contain sufficient detail to determine if the failure mode discovered and reported in Licensee

Event Report (LER) 50/395 2000-004 would exist. The investigation was initiated by review of the McGuire Nuclear Station Notification (event # 36659) and determined that a previously undetected single failure mechanism could occur and prevent automatic actuation of some of the Engineered Safety Features Actuation System actions. This could only occur if one channel of the energize-to-actuate instrumentation were placed in bypass for a significant period of time (as permitted by current Technical Specifications [TS]).

The information required to be submitted with the PSAR was provided and reviewed by the NRC staff.

10 CFR 50.34(b) provides information on the types and level of detail required in the Final Safety Analysis Report (FSAR). The requirements build on those for the PSAR but request additional detail of the design and more thorough analyses to show the identified safety functions will be accomplished.

The information is provided in the FSAR, however, the single failure vulnerability identified in Licensee Event Report (LER) 50/395 2000-004 was unrecognized prior to the discovery of this vulnerability.

10 CFR 50.36 (c)(2)(ii)(C), Criterion 3 states that a Limiting Condition for Operation must be established for a system, structure, or component (SSC) that is a primary success path which functions or actuates to mitigate a design basis accident that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.

The Engineered Safety Feature Actuation System functional units identified in LER 2000-004 have a specific LCO that requires specific action. The single failure vulnerability will possibly preclude the automatic actuation of mitigating systems due to a previously unknown failure mechanism. The LCO currently allows the affected functional units to be placed in bypass with no specified end time, and in conjunction with the loss of the opposite train of battery power during a design basis accident could cause the failure of the expected actuations. The proposed change to the TS would establish an end time for the LCO action. This will not eliminate the single failure vulnerability, but will manage the potential for occurrence to an acceptable value.

10 CFR 50.55a(a)(2) states that protection systems of all nuclear power reactors must meet the requirements identified in paragraph (h). This paragraph identifies two Institute of Electrical and Electronic Engineers (IEEE) standards, IEEE 603-91 and IEEE 279.

SCE&G complies with the requirements of these standards including the requirements concerning single failures, with the exception of the recently identified single failure vulnerability.

10 CFR 50 Appendix A, Criterion 20 states that the protection system shall be designed to initiate automatically the operation of the appropriate systems and to sense accident conditions and initiate the operation of systems and components important to safety.

The protection systems at VCSNS have been designed to this requirement.

10 CFR 50 Appendix A, Criterion 21 states that protection systems shall be designed with testability and reliability in mind. Redundancy and independence will be designed into the system such that no single failure results in the loss of the protective function.

The protection system at VCSNS was designed to satisfy this requirement. The single failure vulnerability identified recently consists of a failure mode that was not considered in the original plant design.

10 CFR 50 Appendix B, Criterion XVI Corrective Action states that measures shall be taken to assure conditions adverse to quality are identified and corrective action taken.

SCE&G complies with this requirement and has a corrective action program to identify adverse conditions and obtain appropriate corrective action. This condition was identified and reported in LER 50/395 2000-004. Immediate corrective actions to place the plant in a safe condition were implemented and a commitment to revise the TS was made to minimize the single failure vulnerability.

Generic Letter 80-30 states that the Standard Technical Specifications were formulated to preserve the single failure criterion for systems that are relied on in the safety analysis report. By and large, specifying limiting conditions for operability preserves the single failure criterion. When the required redundancy is not maintained, action is required within a specified time to place the plant in a safe condition. The specified time in which to take action is a temporary relaxation of the single failure criterion. These provisions have been formulated to assure that no set of equipment outages would be allowed to persist that would result in the facility being in an unprotected condition.

SCE&G agrees with the philosophy presented in this Generic Letter. The initial report (LER 2000-004) was based on the understanding that if a SSC is out of service for an indefinite time period, single failure criterion should be applicable during the entire outage time. With a specified allowed outage time for the LCO, the single failure criterion applies since further action would be required to minimize potential consequences from an accident or operational transients.

Generic Letter 89-18 states that adverse systems interactions (ASIs) involve subtle and often very complicated plant-specific dependencies between components and systems, possibly compounded by inducing erroneous human intervention. Systems interaction is defined as:

Actions or inactions (not necessarily failures) of various systems (subsystems, divisions, trains), components, or structures resulting from a single credible failure within one system, component, or structure and propagation to other systems, components, or structures by inconspicuous or unanticipated interdependencies. The major difference between this type of event and a classic single-failure event is in those aspects of the initiating failure and/or its propagation that are not obvious (i.e., that are hidden or unanticipated).

SCE&G has not detected any adverse systems interaction related to this proposed TS change.