SCE&G
A SCANA COMPANY

April 6, 2000
RC-00-0216

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

Attention: Ms. K. R. Cotton

Gentlemen:

Stephen A. Byrne
Vice President
Nuclear Operations
803.345.4622

Subject: VIRGIL C. SUMMER NUCLEAR STATION
DOCKET NO. 50/395
TECHNICAL SPECIFICATION AMENDMENT REQUEST
TSP 99-0133 RESPONSE TIME TESTING ELIMINATION

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.

South Carolina Electric & Gas Co
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The proposed changes will revise the Definitions 1.12, Engineered Safety Feature (ESF) Response Time and 1.26, Reactor Trip System (RTS) Response Time. Also proposed in this change request are revisions to Surveillance Requirements 4.3.1.2 and 4.3.2.2 and BASES Sections B 3/4.3.1 and B 3/4.3.2. These changes will revise the definition and surveillance requirements for response time testing of the Engineered Safety Feature Actuation System (ESFAS) and the Reactor Trip System.

These changes are in conformance with changes approved in WCAP-13632-P-A, Revision 2, and WCAP-14036-P-A, Revision 1. These are proprietary documents developed by Westinghouse and approved by the NRC in August, 1995, and October, 1998, respectively. These proposed changes are also very similar to those approved for the Vogtle Electric Generating Plant on February 8, 1999.

The purpose for this request is to permit the option of either measuring or verifying the response time for specific components in the above mentioned systems. WCAP-13632-P-A, Revision 2, is for specific pressure sensors and WCAP-14036-P-A, Revision 1, is for instrument loop channels. This option will give VCSNS an opportunity to eliminate redundant measurement of channel performance without reducing the reliability of these systems.

SCE&G desires that this amendment request be approved by September 15, 2000, to permit implementation of the change, including training, prior to the commencement of Refueling Outage 12, scheduled for October 4, 2000.

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
Attachment IV	Commitments to Ensure Equipment Operability

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

These statements and matters set forth herein are true and correct to the best of my knowledge, information, and belief.

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

Very truly yours,

Stephen A. Byrne

PAR/SAB/dr
Attachments (4)

c: J. L. Skolds
J. J. Galan (w/o Attachment)
R. J. White
L. A. Reyes
K. R. Cotton
NRC Resident Inspector
P. Ledbetter
J. B. Knotts, Jr.
T. P. O'Kelly
RTS (TSP 99-0133)
File (813.20)
DMS (RC-00-0216)

STATE OF SOUTH CAROLINA :
: TO WIT :
COUNTY OF FAIRFIELD :

I hereby certify that on the 6th day of April 2000, before me, the subscriber, a Notary Public of the State of South Carolina personally appeared Stephen A. Byrne, being duly sworn, and states that he is 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

Notary Public

My Commission Expires

July 13, 2005
Date

SCE&G -- EXPLANATION OF CHANGES

Page	Affected Section	Bar #	Description	Reason
1-3	1.12	1	Revise definition to permit verification as opposed to measurement of ESFAS RESPONSE TIME.	Incorporate guidance from WCAPs 13632 and 14036.
1-5	1.26	1	Revise definition to permit verification as opposed to measurement of RTS RESPONSE TIME.	Incorporate guidance from WCAPs 13632 and 14036.
3/4 3-1	4.3.1.2	1	Revise Surveillance Requirement to change the word "demonstrated" to "verified" and the word "tested" to "verified".	Incorporate guidance from WCAPs 13632 and 14036.
3/4 3-15	4.3.2.2	1	Revise Surveillance Requirement to change the word "demonstrated" to "verified" and the word "tested" to "verified".	Incorporate guidance from WCAPs 13632 and 14036.
BASES page B3/4 3-1a	B3/4.3.1 and B3/4/3.2	1 2	Revise Bases Section to discuss the alternate methodology of verification for RESPONSE TIME Tests. Moved last paragraph to next page.	Incorporate guidance from WCAPs 13632 and 14036. Repagination.
BASES page B3/4 3-1b	B3/4.3.1 and B3/4.3.2	1 2	Replaced the word "Protection" with "Trip" in the page title. Moved last paragraph to next page.	Consistency with the title for these sections. Repagination.
BASES page B3/4 3-1c	B3/4.3.1 and B3/4.3.2	1	Added title to page.	Consistency with the title for these sections. Repagination.

Insert 1

The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured. In lieu of measurement, response time may be verified for selected components provided that the components and the methodology for verification have been previously reviewed and approved by the NRC.

Insert 2

Response time may be verified by actual response time tests in any series of sequential, overlapping or total channel measurements; or by the summation of allocated sensor, signal processing and actuation logic response times with actual response time tests on the remainder of the channel. Allocations for sensor response times may be obtained from: (1) historical records based on acceptable response time tests (hydraulic, noise or power interrupt tests); (2) in place, onsite, or offsite (e.g., vendor) test measurements; or (3) utilizing vendor engineering specifications. WCAP-13632-P-A, Revision 2, "Elimination of Pressure Sensor Response Time Testing Requirements," provides the basis and methodology for using allocated sensor response times in the overall verification of the channel response time for specific sensors identified in the WCAP. Response time verification for other sensor types must be demonstrated by test.

WCAP 14036-P-A, Revision 1, "Elimination of Periodic Response Time Tests," provides the basis and methodology for using allocated signal processing and actuation logic response times in the overall verification of the protection system channel response time. The allocations for sensor, signal conditioning and actuation logic response times must be verified prior to placing the component into operational service and re-verified following maintenance or modification that may adversely affect response time. In general, electrical repair work does not impact response time provided the parts used for the repair are of the same type and value. Specific components identified in the WCAP may be replaced without verification testing. One example where response time could be affected is replacing the sensing element of a transmitter.

Ē - AVERAGE DISINTEGRATION ENERGY

1.11 Ē shall be the average (weighted in proportion to the concentration of each radionuclide in the reactor coolant at the time of sampling) of the sum of the average beta and gamma energies per disintegration (in MeV) for isotopes, other than iodines, with half lives greater than 15 minutes, making up at least 95% of the total non-iodine activity in the coolant.

ENGINEERED SAFETY FEATURE RESPONSE TIME

1.12 The ENGINEERED SAFETY FEATURE RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its ESF actuation setpoint at the channel sensor until the ESF equipment is capable of performing its safety function (i.e., the valves travel to their required positions, pump discharge pressures reach their required values, etc.). Times shall include diesel generator starting and sequence loading delays where applicable. ← INSERT 1

FREQUENCY NOTATION

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

GASEOUS RADWASTE TREATMENT SYSTEM

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

IDENTIFIED LEAKAGE

1.15 IDENTIFIED LEAKAGE shall be:

a. Leakage (except CONTROLLED LEAKAGE) into closed systems, such as pump seal or valve packing leaks that are captured and conducted to a sump or collecting tank, or

b. Leakage into the containment atmosphere from sources that are both specifically located and known either not to interfere with the operation of leakage detection systems or not to be PRESSURE BOUNDARY LEAKAGE, or

c. Reactor coolant system leakage through a steam generator to the secondary system.

MASTER RELAY TEST

1.16 A MASTER RELAY TEST shall be the energization of each master relay and verification of OPERABILITY of each relay. The MASTER RELAY TEST shall include a continuity check of each associated slave relay.

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PURGE - PURGING

1.23 PURGE or PURGING is the controlled process of discharging air or gas from a confinement to maintain temperature, pressure, humidity, concentration or other operating condition, in such a manner that replacement air or gas is required to purify the confinement.

QUADRANT POWER TILT RATIO

1.24 QUADRANT POWER TILT RATIO shall be the ratio of the maximum upper excore detector calibrated output to the average of the upper excore detector calibrated outputs, or the ratio of the maximum lower excore detector calibrated output to the average of the lower excore detector calibrated outputs, whichever is greater. With one excore detector inoperable, the remaining three detectors shall be used for computing the average.

RATED THERMAL POWER

1.25 RATED THERMAL POWER shall be a total reactor core heat transfer rate to the reactor coolant of 2900 MWt.

REACTOR TRIP SYSTEM RESPONSE TIME

1.26 The REACTOR TRIP SYSTEM RESPONSE TIME shall be the time interval from when the monitored parameter exceeds its trip setpoint at the channel sensor until loss of stationary gripper coil voltage. ← INSERT 1

REPORTABLE EVENT

1.27 A REPORTABLE EVENT shall be any of those conditions specified in Section 50.73 to 10 CFR Part 50.

SHUTDOWN MARGIN

1.28 SHUTDOWN MARGIN shall be the instantaneous amount of reactivity by which the reactor is subcritical or would be subcritical from its present condition assuming all full length rod cluster assemblies (shutdown and control) are fully inserted except for the single rod cluster assembly of highest reactivity worth which is assumed to be fully withdrawn.

SLAVE RELAY TEST

1.29 A SLAVE RELAY TEST shall be the energization of each slave relay and verification of OPERABILITY of each relay. The SLAVE RELAY TEST shall include a continuity check, as a minimum, of associated testable actuation devices.

1.30 Not Used

SOURCE CHECK

1.31 A SOURCE CHECK shall be the qualitative assessment of channel response when the channel sensor is exposed to a radioactive source.

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SOURCE CHECK

1.31 A SOURCE CHECK shall be the qualitative assessment of channel response when the channel sensor is exposed to a radioactive source.

3/4.3 INSTRUMENTATION

3/4.3.1 REACTOR TRIP SYSTEM INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.1 As a minimum, the reactor trip system instrumentation channels and interlocks of Table 3.3-1 shall be OPERABLE with RESPONSE TIMES as shown in Table 3.3-2.

APPLICABILITY: As shown in Table 3.3-1.

ACTION:

As shown in Table 3.3-1.

SURVEILLANCE REQUIREMENTS

4.3.1.1 Each reactor trip system instrumentation channel and interlock and the automatic trip logic shall be demonstrated OPERABLE by performance of the reactor trip system instrumentation surveillance requirements specified in Table 4.3-1.

4.3.1.2 The REACTOR TRIP SYSTEM RESPONSE TIME of each reactor trip function shall be ~~demonstrated~~ verified to be within its limit at least once per 18 months. Each ~~test~~ verification shall include at least one train such that both trains are ~~tested~~ verified at least once per 36 months and one channel per function such that all channels are ~~tested~~ verified at least once every N times 18 months where N is the total number of redundant channels in a specific reactor trip function as shown in the "Total No. of Channels" column of Table 3.3-1.

3/4.3 INSTRUMENTATION

3/4.3.1 REACTOR TRIP SYSTEM INSTRUMENTATION

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ACTION:

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INSTRUMENTATION

3/4 3.2 ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.2 The Engineered Safety Feature Actuation System (ESFAS) instrumentation channels and interlocks shown in Table 3.3-3 shall be OPERABLE with their trip setpoints set consistent with the values shown in the Trip Setpoint column of Table 3.3-4 and with RESPONSE TIMES as shown in Table 3.3-5.

APPLICABILITY: As shown in Table 3.3-3.

ACTION:

a. With an ESFAS Instrumentation or Interlock Trip Setpoint trip less conservative than the value shown in the Trip Setpoint Column but more conservative than the value shown in the Allowable Value Column of Table 3.3-4, adjust the Setpoint consistent with the Trip Setpoint value.

b. With an ESFAS Instrumentation or Interlock Trip Setpoint less conservative than the value shown in the Allowable Value Column of Table 3.3-4, declare the channel inoperable and apply the applicable ACTION statement requirements of Table 3.3-3 until the channel is restored to its OPERABLE status with its setpoint adjusted consistent with the Trip Setpoint value.

c. With an ESFAS instrumentation channel or interlock inoperable take the ACTION shown in Table 3.3-3.

SURVEILLANCE REQUIREMENTS

4.3.2.1 Each ESFAS instrumentation channel and interlock and the automatic actuation logic and relays shall be demonstrated OPERABLE by performance of the engineered safety feature actuation system instrumentation surveillance requirements specified in Table 4.3-2.

Verification

4.3.2.2 The ENGINEERED SAFETY FEATURES RESPONSE TIME of each ESFAS function shall be ~~demonstrated~~ to be within the limit at least once per 18 months. Each ~~test~~ shall include at least one train such that both trains are ~~tested~~ at least once per 36 months and one channel per function such that all channels are ~~tested~~ at least once per N times 18 months where N is the total number of redundant channels in a specific ESFAS function as shown in the "Total No. of Channels" Column of Table 3.3-3.

Verified

3/4 3.2 ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.2 The Engineered Safety Feature Actuation System (ESFAS) instrumentation channels and interlocks shown in Table 3.3-3 shall be OPERABLE with their trip setpoints set consistent with the values shown in the Trip Setpoint column of Table 3.3-4 and with RESPONSE TIMES as shown in Table 3.3-5.

APPLICABILITY: As shown in Table 3.3-3.

ACTION:

a. With an ESFAS Instrumentation or Interlock Trip Setpoint trip less conservative than the value shown in the Trip Setpoint Column but more conservative than the value shown in the Allowable Value Column of Table 3.3-4, adjust the Setpoint consistent with the Trip Setpoint value.

b. With an ESFAS Instrumentation or Interlock Trip Setpoint less conservative than the value shown in the Allowable Value Column of Table 3.3-4, declare the channel inoperable and apply the applicable ACTION statement requirements of Table 3.3-3 until the channel is restored to its OPERABLE status with its setpoint adjusted consistent with the Trip Setpoint value.

c. With an ESFAS instrumentation channel or interlock inoperable take the ACTION shown in Table 3.3-3.

SURVEILLANCE REQUIREMENTS

4.3.2.1 Each ESFAS instrumentation channel and interlock and the automatic actuation logic and relays shall be demonstrated OPERABLE by performance of the engineered safety feature actuation system instrumentation surveillance requirements specified in Table 4.3-2.

4.3.2.2 The ENGINEERED SAFETY FEATURES RESPONSE TIME of each ESFAS function shall be verified to be within the limit at least once per 18 months. Each verification shall include at least one train such that both trains are verified at least once per 36 months and one channel per function such that all channels are verified at least once per N times 18 months where N is the total number of redundant channels in a specific ESFAS function as shown in the "Total No. of Channels" Column of Table 3.3-3.

REACTOR TRIP AND ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION (continued)

will happen, an infrequent excessive drift is expected. Rack or sensor drift, in excess of the allowance that is more than occasional, may be indicative of more serious problems and should warrant further investigation.

The measurement of response time at the specified frequencies provides assurance that the reactor trip and the engineered safety feature actuation associated with each channel is completed within the time limit assumed in the accident analyses. No credit was taken in the analyses for those channels with response times indicated as not applicable. Response time may be demonstrated by any series of sequential, overlapping or total channel test measurements provided that such tests demonstrate the total channel response time as defined. ~~Sensor response time verification may be demonstrated by either 1) in place, onsite, or offsite test measurements or 2) utilizing replacement sensors with certified response times.~~

INSERT 2 →

The Engineered Safety Features response times specified in Table 3.3-5 which include sequential operation of the RWST and VCT valves (Notes 2 and 3) are based on values assumed in the non-LOCA safety analyses. These analyses are for injection of borated water from the RWST. Injection of borated water is assumed not to occur until the VCT charging pump suction isolation valves are closed following opening of the RWST charging pumps suction valves. When the sequential operation of the RWST and VCT valves is not included in the response times (Note 1) the values specified are based on the LOCA analyses. The LOCA analyses take credit for injection flow regardless of the source. Verification of the response times specified in Table 3.3-5 will assure that the assumptions used for the LOCA and non-LOCA analyses with respect to the operation of the VCT and RWST valves are valid.

The Engineered Safety Features Actuation System senses selected plant parameters and determines whether or not predetermined limits are being exceeded. If they are, the signals are combined into logic matrices sensitive to combinations indicative of various accidents, events, and transients. Once the required logic combination is completed, the system sends actuation signals to those engineered safety features components whose aggregate function best serves the requirements of the condition. As an example, the following actions may be initiated by the Engineered Safety Features Actuation System to mitigate the consequences of a steam line break or loss of coolant accident 1) safety injection pumps start and automatic valves position, 2) reactor trip, 3) feedwater isolation, 4) startup of the emergency diesel generators, 5) containment spray pumps start and automatic valves position, 6) containment isolation, 7) steam line isolation, 8) turbine trip, 9) auxiliary feedwater pumps start and automatic valves position, 10) containment cooling fans start and automatic valves position, 11) essential service water pumps start and automatic valves position, and 12) control room isolation and ventilation systems start.

REACTOR TRIP AND ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION (continued)

will happen, an infrequent excessive drift is expected. Rack or sensor drift, in excess of the allowance that is more than occasional, may be indicative of more serious problems and should warrant further investigation.

The measurement of response time at the specified frequencies provides assurance that the reactor trip and the engineered safety feature actuation associated with each channel is completed within the time limit assumed in the accident analyses. No credit was taken in the analyses for those channels with response times indicated as not applicable. Response time may be demonstrated by any series of sequential, overlapping or total channel test measurements provided that such tests demonstrate the total channel response time as defined. Response time may be verified by actual response time tests in any series of sequential, overlapping, or total channel measurements, or by the summation of allocated sensor, signal processing, and actuation logic response times with actual response time tests on the remainder of the channel. Allocations for sensor response times may be obtained from: (1) historical records based on acceptable response time tests (hydraulic, noise or power interrupt tests), (2) in place, onsite, or offsite (e.g., vendor) test measurements, or (3) utilizing vendor engineering specifications. WCAP-13632-P-A, Revision 2, "Elimination of Pressure Sensor Response Time Testing Requirements," provides the basis and methodology for using allocated sensor response times in the overall verification of the channel response time for specific sensors identified in the WCAP. Response time verification for other sensor types must be demonstrated by test.

WCAP 14036-P-A, Revision 1, "Elimination of Periodic Response Time Tests," provides the basis and methodology for using allocated signal processing and actuation logic response times in the overall verification of the protection system channel response time. The allocations for sensor, signal conditioning, and actuation logic response times must be verified prior to placing the component into operational service and re-verified following maintenance or modification that may adversely affect response time. In general, electrical repair work does not impact response time provided the parts used for the repair are of the same type and value. Specific components identified in the WCAP may be replaced without verification testing. One example where response time could be affected is replacing the sensing element of a transmitter.

The Engineered Safety Features response times specified in Table 3.3-5 which include sequential operation of the RWST and VCT valves (Notes 2 and 3) are based on values assumed in the non-LOCA safety analyses. These analyses are for injection of borated water from the RWST. Injection of borated water is assumed not to occur until the VCT charging pump suction isolation valves are closed following opening of the RWST charging pumps suction valves. When the sequential operation of the RWST and VCT valves is not included in the response times (Note 1) the values specified are based on the LOCA analyses. The LOCA analyses take credit for injection flow regardless of the source. Verification of the response times specified in Table 3.3-5 will assure that the assumptions used for the LOCA and non-LOCA analyses with respect to the operation of the VCT and RWST valves are valid.

TRIP

REACTOR ~~PROTECTION SYSTEM~~ AND ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION (continued)

Several automatic logic functions included in this specification are not necessary for Engineered Safety Feature System actuation but their functional capability at the specified setpoints enhances the overall reliability of the Engineered Safety Features functions. These automatic actuation systems are purge and exhaust isolation from high containment radioactivity, turbine trip and feedwater isolation from steam generator high-high water level, initiation of emergency feedwater on a trip of the main feedwater pumps, automatic transfer of the suctions of the emergency feedwater pumps to service water on low suction pressure, and automatic opening of the containment recirculation sump suction valves for the RHR and spray pumps on low-low refueling water storage tank level.

The service water response time includes: 1) the start of the service water pumps and, 2) the service water pumps discharge valves (3116A,B,C-SW) stroking to the fully opened position. This condition of the valves assures that flow will become established through the component cooling water heat exchanger, diesel generator coolers, HVAC chiller, and to the suction of the service water booster pumps when these components are placed in-service. Prior to this time, the flow is rapidly approaching required flow and sufficient pressure is developed as valves finish their stroke. Each of the above-listed components will be starting to perform their accident mitigation function, either directly or indirectly depending upon the use of the component, and will be operational within the service water response time of 71.5/81.5 seconds[1/]. Only the service water booster pumps have a direct impact on the accident analysis via the RBCUs' heat removal capability as discussed below.

The RBCU response time includes: 1) the start of the RBCU fan and the service water booster pumps and, 2) all the service water valves which must be driven to the fully opened or fully closed position. This condition of the valves allows the flow to become fully established through the RBCU. Prior to this time, the flow is rapidly approaching required flow as the

MOVED TO Page B 3/4 3-1C

1/Total time is 1.5 second instrument response after setpoint is reached, plus 10 seconds diesel generator start, plus 10 seconds to reach service water pump start and begin 3116-SW opening via Engineered Safety Features Loading Sequencer, plus 60 seconds stroke time for 3116-SW. During this total time, the service water pumps start and the service water pump discharge valve begins to open at 11.5 seconds and the pump discharge valve is fully open at 71.5 seconds without a diesel generator start required and 21.5 seconds and 81.5 seconds including a diesel generator start.

REACTOR TRIP AND ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION (continued)

The Engineered Safety Features Actuation System senses selected plant parameters and determines whether or not predetermined limits are being exceeded. If they are, the signals are combined into logic matrices sensitive to combinations indicative of various accidents, events, and transients. Once the required logic combination is completed, the system sends actuation signals to those engineered safety features components whose aggregate function best serves the requirements of the condition. As an example, the following actions may be initiated by the Engineered Safety Features Actuation System to mitigate the consequences of a steam line break or loss of coolant accident 1) safety injection pumps start and automatic valves position, 2) reactor trip, 3) feedwater isolation, 4) startup of the emergency diesel generators, 5) containment spray pumps start and automatic valves position, 6) containment isolation, 7) steam line isolation, 8) turbine trip, 9) auxiliary feedwater pumps start and automatic valves position, 10) containment cooling fans start and automatic valves position, 11) essential service water pumps start and automatic valves position, and 12) control room isolation and ventilation systems start.

Several automatic logic functions included in this specification are not necessary for Engineered Safety Feature System actuation but their functional capability at the specified setpoints enhances the overall reliability of the Engineered Safety Features functions. These automatic actuation Systems are purge and exhaust isolation from high containment radioactivity, turbine trip and feedwater isolation from steam generator high-high water level, initiation of emergency feedwater on a trip of the main feedwater pumps, automatic transfer of the suctions of the emergency feedwater pumps to service water on low suction pressure, and automatic opening of the containment recirculation sump suction valves for the RHR and spray pumps on low-low refueling water storage tank level.

The service water response time includes: 1) the start of the service water pumps and, 2) the service water pumps discharge valves (3116A,B,C-SW) stroking to the fully opened position. This condition of the valves assures that flow will become established through the component cooling water heat exchanger, diesel generator coolers, HVAC chiller, and to the suction of the service water booster pumps when these components are placed in-service. Prior to this time, the flow is rapidly approaching required flow and sufficient pressure is developed as valves finish their stroke. Each of the above-listed components will be starting to perform their accident mitigation function, either directly or indirectly depending upon the use of the component, and will be operational within the service water response time of 71.5/81.5 seconds[1/]. Only the service water booster pumps have a direct impact on the accident analysis via the RBCUs' heat removal capability as discussed below.

[1/] Total time is 1.5 second instrument response after setpoint is reached, plus 10 seconds diesel generator start, plus 10 seconds to reach service water pump start and begin 3116-SW opening via Engineered Safety Features Loading Sequencer, plus 60 seconds stroke time for 3116-SW. During this total time, the service water pumps start and the service water pump discharge valve begins to open at 11.5 seconds and the pump discharge valve is fully open at 71.5 seconds without a diesel generator start required and 21.5 seconds and 81.5 seconds including a diesel generator start.

valves finish their stroke. Although the RBCU would be removing heat throughout the Engineered Safety Features response time, the accident analysis does not assume heat removal capability from 0 to 71.5 seconds [2/] because the industrial cooling water system is not completely isolated until 71.5 seconds. A linear ramp increase from 95% full heat removal capability to 100% full heat removal capability is assumed by the accident analysis to start at 71.5 seconds and end at 86.5 seconds[3/]. Full heat removal capability is assumed at 86.5 seconds based on the position of the valve 3107-SW.

2/Total time is 1.5 second instrument response after setpoint is reached, plus 10 second diesel start plus 60 seconds* for valves to isolate industrial cooling water system.

3/Total time is 1.5 second instrument response after setpoint is reached, plus 10 second diesel generator start plus 75 seconds to stroke valves 3107A,B-SW.

*During this time period, the Engineered Safety Features Loading Sequencer starts the RBCU fans at 25 seconds and service water booster pumps at 30 seconds after the valves begin to stroke.

REACTOR TRIP AND ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION (continued)

The RBCU response time includes: 1) the start of the RBCU fan and the service water booster pumps and, 2) all the service water valves which must be driven to the fully opened or fully closed position. This condition of the valves allows the flow to become fully established through the RBCU. Prior to this time, the flow is rapidly approaching required flow as the valves finish their stroke. Although the RBCU would be removing heat throughout the Engineered Safety Features response time, the accident analysis does not assume heat removal capability from 0 to 71.5 seconds [2/] because the industrial cooling water system is not completely isolated until 71.5 seconds. A linear ramp increase from 95% full heat removal capability to 100% full heat removal capability is assumed by the accident analysis to start at 71.5 seconds and end at 86.5 seconds[3/]. Full heat removal capability is assumed at 86.5 seconds based on the position of the valve 3107-SW.

2/ Total time is 1.5 second instrument response after setpoint Is reached, plus 10 second diesel start plus 60 seconds* for valves to isolate industrial cooling water system.

3/ Total time is 1.5 second instrument response after setpoint is reached, plus 10 second diesel generator start plus 75 seconds to stroke valves 3107A, B-SW.

* During this time period, the Engineered Safety Features Loading Sequencer starts the RBCU fans at 25 seconds and service water booster pumps at 30 seconds after the valves begin to stroke.

SAFETY EVALUATION FOR REVISING RESPONSE TIME TESTING 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 change the definitions for 1.12 "Engineered Safety Feature (ESF) Response Time" and 1.26 "Reactor Trip System (RTS) Response Time. These changes will permit the verification of response time, whereas, the current definitions imply the response time must be measured. Additionally, Surveillance Requirements 4.3.1.2 and 4.3.2.2 are being revised to incorporate the philosophy approved in WCAPs 13632-P-A, Revision 2 and 14036-P-A, Revision 1. This change replaces the words "demonstrated" and "tested" with the words "verified" and "verification". Associated Bases changes are made to Section B 3/4.3.1 and B 3/4.3.2.

These changes are applicable for selected components provided both the components and the methodology for verification have previously been reviewed and approved by the NRC.

Background

Instrument response time is, generally, the time span from when a monitored variable exceeds a predetermined setpoint, at the channel sensor, until the actuated device is capable of performing its safety function. Response time testing (RTT) has been an integral part of Technical Specifications (TS) surveillance program to assure the proper functioning of the sensors and instrumentation loops for the ESFAS and the RTS.

The Westinghouse Owners Group performed two analyses to assess the impact of elimination of RTT for instruments and instrument loops. These analyses also discussed alternate test methodologies that would show that the instrumentation was functioning properly. The first of these analyses was Westinghouse Owners Group licensing Topical Report WCAP-13632-P-A, Revision 2, "Elimination of Pressure Sensor Response Time Testing Requirements", which was approved by the NRC on September 5, 1995. The second analysis, WCAP-14036-P-A, Revision 1, "Elimination of Periodic Protection Channel Response Time Tests", was approved by the NRC on October 6, 1998. Both of these documents contain proprietary Westinghouse information. The Safety Evaluations approving these documents stipulated certain conditions that a licensee must meet when implementing the guidelines presented in these documents. These conditions will be satisfied upon implementation of this change.

Safety Evaluation

In this proposed change, there are essentially two separate requests. The first change is to eliminate periodic pressure sensor RTT in accordance with WCAP-13632-P-A, Revision 2, while the second change is to eliminate protective channel RTT in accordance with WCAP-14036-P-A, Revision 1.

The first proposed change will eliminate the periodic response time testing associated with the following sensors:

- Barton 752
- Barton 752 with model 351 sealed sensor
- Barton 763 / 763A
- Barton 764
- Rosemount 1154

WCAP-13632-P-A, Revision 2, did not provide an allocated response time for Rosemount Model 1154 instruments. To obtain the baseline value as directed in Table 9-1 of the WCAP, the previous response times of all the Model 1154 instruments were reviewed. The most conservative value was obtained in March 1999, and was 0.260 seconds. The Model 1154 instruments at VCS do not have the adjustable damping option.

VCS has chosen to standardize the time allocation for the Barton (model Numbers 752, 763, 763A, and 764) and Rosemount (model 1154) response times and apply the most conservative allocation (0.400 seconds).

The second proposed change will eliminate the periodic response time testing for the RTS and ESFAS systems. Alternately, VCS will depend on calibration and other periodic testing as described in WCAP-14036-P-A, Revision 1, in order to determine the proper operation and functioning of the RTS and ESFAS instrumentation. In those cases where TS requires the verification that a protective system can meet its protective function in a specified time, a bounding response time will be added to those portions of the protective system actual response time tested in order to determine the total system response time. The requirement to actually measure the response times would be eliminated, and instead, the response times will be verified by summing allocated times for sensors, the process protection system, the nuclear instrumentation system, and the logic system. These allocated times will be added to the measured times for the actuated components and compared to the overall analysis limits.

The following table identifies the functions that are affected by the proposed change:

REACTOR TRIP SYSTEM

FUNCTION / ALLOCATION TIME

PAGE 1 OF 2

FUNCTION	SENSOR	TIME NOTE 2	PROCESS	TIME NOTE 4	SSPS RELAYS	TIME NOTE 6
PRESSURIZER PRESSURE HIGH	BARTON 763 / 763A	0.400SEC	7300	0.100 SEC	INPUT + SSPS LOGIC	0.020 SEC
PRESSURIZER PRESSURE LOW	BARTON 763 / 763A	0.400 SEC	7300	0.100 SEC	INPUT + SSPS LOGIC	0.020 SEC
PRESSURIZER PRESSURE LO - SI	BARTON 763 / 763A	0.400 SEC	7300	0.100 SEC	INPUT + SSPS LOGIC	0.020 SEC
LOSS OF FLOW - SINGLE LOOP	BARTON 752	0.400 SEC	7300	0.100 SEC	INPUT + SSPS LOGIC	0.020 SEC
LOSS OF FLOW - TWO LOOPS	BARTON 752	0.400SEC	7300	0.100 SEC	INPUT + SSPS LOGIC	0.020 SEC
STEAM LINE PRESSURE LO - SI	BARTON 763	0.400 SEC	7300	0.100 SEC	INPUT + SSPS LOGIC	0.020 SEC
SG WATER LEVEL LO-LO	BARTON 764	0.400 SEC	7300	0.100 SEC	INPUT + SSPS LOGIC	0.020 SEC
CONT. PRESS. HIGH - SI	BARTON 752 WITH MODEL 351 SEALED SENSOR	1.400 SEC	7300	0.100 SEC	INPUT + SSPS LOGIC	0.020 SEC
POWER RANGE NEUTRON FLUX HIGH SETPOINT (NIS LEVEL TRIP)	NOTE 1	N/A	NIS	0.065 SEC	INPUT + SSPS LOGIC	0.020 SEC
POWER RANGE NEUTRON FLUX LOW SETPOINT (NIS LEVEL TRIP)	NOTE 1	N/A	NIS	0.065 SEC	INPUT + SSPS LOGIC	0.020 SEC

REACTOR TRIP SYSTEM

FUNCTION / ALLOCATION TIME

PAGE 2 OF 2

FUNCTION	SENSOR	TIME NOTE 2	PROCESS	TIME NOTE 4	SSPS RELAYS	TIME NOTE 6
OTDT (VARY NEUTRON FLUX) ** Includes 1 msec for isolation amplifier per WCAP-14036-P-A, R1, section 4.6	NOTE 1	N/A	NIS / 7300	0.401 SEC **	INPUT + SSPS LOGIC	0.020 SEC
OTDT (VARY Tavg)	NOTE 3	N/A	7300 NOTE 5	0.4375 SEC	INPUT + SSPS LOGIC	0.020 SEC
OTDT (VARY DELTA T)	NOTE 3	N/A	7300 NOTE 5	0.4375 SEC	INPUT + SSPS LOGIC	0.020 SEC
OTDT (VARY PRESSURE)	BARTON 763 / 763A	0.400 SEC	7300	0.400 SEC	INPUT + SSPS LOGIC	0.020 SEC
OPDT (VARY DELTA T)	NOTE 3	N/A	7300 NOTE 5	0.4375 SEC	INPUT + SSPS LOGIC	0.020 SEC
OPDT (VARY Tavg)	NOTE 3	N/A	7300 NOTE 5	0.4375 SEC	INPUT + SSPS LOGIC	0.020 SEC
RCP UNDERVOLTAGE	NOTE 3	N/A	NA	NA	INPUT + SSPS LOGIC	0.020 SEC
RCP UNDERFREQUENCY	NOTE 3	N/A	NA	NA	INPUT + SSPS LOGIC	0.020 SEC
DIFFERENTIAL PRESSURE BETWEEN STEAM LINES HI – SI	BARTON 763	0.400 SEC	7300	0.100 SEC	INPUT + SSPS LOGIC	0.020 SEC

ENGINEERED SAFETY FEATURE

FUNCTION / ALLOCATION

PAGE 1 OF 3

FUNCTION	SENSOR	TIME NOTE 2	PROCESS	TIME NOTE 4	SSPS RELAYS	TIME NOTE 6
PRESSURIZER PRESSURE LO - SI (ECCS)	BARTON 763 / 763A	0.400 SEC	7300	0.100 SEC	INPUT + SSPS LOGIC + MASTER + SLAVE RELAYS	0.088 SEC
PRESSURIZER PRESSURE LO - FEEDWATER ISOLATION	BARTON 763 / 763A	0.400 SEC	7300	0.100SEC	INPUT + SSPS LOGIC + MASTER + SLAVE RELAYS	0.124 SEC
PRESSURIZER PRESSURE LO - CONTAINMENT ISOLATION PHASE A	BARTON 763 / 763A	0.400 SEC	7300	0.100 SEC	INPUT + SSPS LOGIC + MASTER + SLAVE RELAYS	0.088 SEC
PRESSURIZER PRESSURE LO - EMERGENCY FEEDWATER PUMPS	BARTON 763 / 763A	0.400 SEC	7300	0.100 SEC	INPUT + SSPS LOGIC + MASTER + SLAVE RELAYS	0.088 SEC
PRESSURIZER PRESSURE LO - SW SYSTEM	BARTON 763 / 763A	0.400 SEC	7300	0.100 SEC	INPUT + SSPS LOGIC + MASTER + SLAVE RELAYS	0.088 SEC
PRESSURIZER PRESSURE LO – RB COOLING UNITS	BARTON 763 / 763A	0.400 SEC	7300	0.100 SEC	INPUT + SSPS LOGIC + MASTER + SLAVE RELAYS	0.088 SEC
SG WATER LEVEL LO-LO (MOTOR DRIVEN EMERGENCYFEEDWATER PUMPS)	BARTON 764	0.400 SEC	7300	0.100 SEC	INPUT + SSPS LOGIC + MASTER + SLAVE RELAYS	0.088 SEC
SG WATER LEVEL LO-LO (TURBINE DRIVEN EMERGENCT FEEDWATER PUMP)	BARTON 764	0.400 SEC	7300	0.100 SEC	INPUT + SSPS LOGIC + MASTER + SLAVE RELAYS	0.088 SEC
SG WATER LEVEL HI-HI (FEEDWATER ISOLATION)	BARTON 764	0.400 SEC	7300	0.100 SEC	INPUT + SSPS LOGIC + MASTER + SLAVE RELAYS	0.088 SEC
CONTAINMENT PRESSURE HI-3 CONTAINMENT SPRAY	BARTON 752 WITH MODEL 351 SEALED SENSOR	1.400 SEC	7300	0.100 SEC	INPUT + SSPS LOGIC + MASTER + SLAVE RELAYS	0.088 SEC
CONTAINMENT PRESSURE HI-2 STEAM LINE ISOLATION	BARTON 752 WITH MODEL 351 SEALED SENSOR	1.400 SEC	7300	0.100 SEC	INPUT + SSPS LOGIC + MASTER + SLAVE RELAYS	0.088 SEC
CONTAINMENT PRESSURE HI - SI (ECCS)	BARTON 752 WITH MODEL 351 SEALED SENSOR	1.400 SEC	7300	0.100 SEC	INPUT + SSPS LOGIC + MASTER + SLAVE RELAYS	0.088 SEC
CONTAINMENT PRESSURE HI - FEEDWATER ISOLATION	BARTON 752 WITH MODEL 351 SEALED SENSOR	1.400 SEC	7300	0.100 SEC	INPUT + SSPS LOGIC + MASTER + SLAVE RELAYS	0.124 SEC
CONTAINMENT PRESSURE HI - CONTAINMENT ISOLATION PHASE A	BARTON 752 WITH MODEL 351 SEALED SENSOR	1.400 SEC	7300	0.100 SEC	INPUT + SSPS LOGIC + MASTER + SLAVE RELAYS	0.088 SEC

ENGINEERED SAFETY FEATURE

FUNCTION / ALLOCATION TIME

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FUNCTION	SENSOR	TIME NOTE 2	PROCESS	TIME NOTE 4	SSPS RELAYS	TIME NOTE 6
CONTAINMENT PRESSURE HI –EMERGENCY FEEDWATER PUMPS	BARTON 752 WITH MODEL 351 SEALED SENSOR	1.400 SEC	7300	0.100 SEC	INPUT + SSPS LOGIC + MASTER + SLAVE RELAYS	0.088 SEC
CONTAINMENT PRESSURE HI – SW SYSTEM	BARTON 752 WITH MODEL 351 SEALED SENSOR	1.400 SEC	7300	0.100 SEC	INPUT + SSPS LOGIC + MASTER + SLAVE RELAYS	0.088 SEC
CONTAINMENT PRESSURE HI – RB COOLING UNITS	BARTON 752 WITH MODEL 351 SEALED SENSOR	1.400 SEC	7300	0.100 SEC	INPUT + SSPS LOGIC + MASTER + SLAVE RELAYS	0.088 SEC
STEAM LINE PRESSURE LO – SI (ECCS)	BARTON 763	0.400 SEC	7300	0.100 SEC	INPUT + SSPS LOGIC + MASTER + SLAVE RELAYS	0.088 SEC
STEAM LINE PRESSURE LO - FEEDWATER ISOLATION	BARTON 763	0.400 SEC	7300	0.100 SEC	INPUT + SSPS LOGIC + MASTER + SLAVE RELAYS	0.124 SEC
STEAM LINE PRESSURE LO - CONTAINMENT ISOLATION PHASE A	BARTON 763	0.400 SEC	7300	0.100 SEC	INPUT + SSPS LOGIC + MASTER + SLAVE RELAYS	0.088 SEC
STEAM LINE PRESSURE LO – EMERGENCY FEEDWATER PUMPS	BARTON 763	0.400 SEC	7300	0.100 SEC	INPUT + SSPS LOGIC + MASTER + SLAVE RELAYS	0.088 SEC
STEAM LINE PRESSURE LO – SW SYSTEM	BARTON 763	0.400 SEC	7300	0.100 SEC	INPUT + SSPS LOGIC + MASTER + SLAVE RELAYS	0.088 SEC
STEAM LINE PRESSURE LO – RB COOLING UNITS	BARTON 763	0.400 SEC	7300	0.100 SEC	INPUT + SSPS LOGIC + MASTER + SLAVE RELAYS	0.088 SEC
STEAM LINE PRESSURE LO – STEAMLINE ISOLATION	BARTON 763	0.400 SEC	7300	0.100 SEC	INPUT + SSPS LOGIC + MASTER + SLAVE RELAYS	0.088 SEC
DIFFERENTIAL PRESSURE BETWEEN STEAM LINES HIGH – SI (ECCS)	BARTON 763	0.400 SEC	7300	0.100 SEC	INPUT + SSPS LOGIC + MASTER + SLAVE RELAYS	0.088 SEC
DIFFERENTIAL PRESSURE BETWEEN STEAM LINES HIGH – FEEDWATER ISOL.	BARTON 763	0.400 SEC	7300	0.100 SEC	INPUT + SSPS LOGIC + MASTER + SLAVE RELAYS	0.124 SEC
DIFFERENTIAL PRESSURE BETWEEN STEAM LINES HIGH – EMERGENCY FEEDWATER PUMPS	BARTON 763	0.400 SEC	7300	0.100 SEC	INPUT + SSPS LOGIC + MASTER + SLAVE RELAYS	0.088 SEC
DIFFERENTIAL PRESSURE BETWEEN STEAM LINES HIGH – CONTAINMENT ISOLATION PHASE A	BARTON 763	0.400 SEC	7300	0.100 SEC	INPUT + SSPS LOGIC + MASTER + SLAVE RELAYS	0.088 SEC

ENGINEERED SAFETY FEATURE

FUNCTION / ALLOCATION TIME

PAGE 3 OF 3

FUNCTION	SENSOR	TIME NOTE 2	PROCESS	TIME NOTE 4	SSPS RELAYS	TIME NOTE 6
DIFFERENTIAL PRESSURE BETWEEN STEAM LINES HIGH – SW SYSTEM	BARTON 763	0.400 SEC	7300	0.100 SEC	INPUT + SSPS LOGIC + MASTER + SLAVE RELAYS	0.088 SEC
DIFFERENTIAL PRESSURE BETWEEN STEAM LINES HIGH – RB COOLING UNITS	BARTON 763	0.400 SEC	7300	0.100 SEC	INPUT + SSPS LOGIC + MASTER + SLAVE RELAYS	0.088 SEC
STEAM FLOW IN TWO LINES HIGH WITH LO-LO TAVG– STM LINE ISOL - VARY FLOW	ROSEMOUNT 1154	0.400 SEC	7300	1.300 SEC NOTE 7	INPUT + SSPS LOGIC + MASTER + SLAVE RELAYS	0.088 SEC
STEAM FLOW IN TWO LINES HIGH WITH LO-LO TAVG–STM LINE ISOL - VARY TAVG *NRA + NSA+NSA+NAL	NOTE 3	N/A	7300	0.293 SEC*	INPUT + SSPS LOGIC + MASTER + SLAVE RELAYS	0.088 SEC

NOTES APPLICABLE TO TABLES 1 AND 2:

1. Neutron detectors are exempt from response time testing per VCS Technical Specification, Table 3.3-2, Note 1.

2. WCAP-13632-P-A, Revision 2, allocated response time for Barton sensors used at VCS is as follows:

Model 752	400 msec
Model 763/763A	200 msec
Model 764	400 msec

   WCAP-13632-P-A, Revision 2, did not provide an allocated response time for Rosemount Model 1154 instruments. To obtain the baseline value as directed in Table 9-1 of WCAP-13632-P-A, Revision 2, the previous response times of all the 1154 instruments were reviewed. The most conservative value was obtained in March 1999. This value is 0.260 sec. Rosemount Model 1154 instruments used at VCS do not have the adjustable damping option.

   VCS has chosen to standardize the allocation for the Barton (models 752, 763 and 764) and Rosemount (model 1154) response times and apply 0.400 sec.

3. These sensors were not included in Westinghouse evaluation for Elimination of Response Time Testing. Therefore, allocated sensor time is not used for these variables. These components will continue to be tested as required.

4. WCAP-14036-P-A, Revision 1, evaluated 7300 Cards for response time elimination are 7NMD, 4NCH, 4NRA, 6NLP, 4NSA, and 9NAL or older artwork levels. All of these are applicable for VCS. Other versions of these cards in use at VCS will not be included in this response time elimination request. The Nuclear Instrumentation System is addressed in section 4.6 of WCAP-14036-P-A, Revision 1.

5. 0.0375 sec added to the allocation in WCAP-14036-P-A, Revision 1, due to an additional NSA card installed as part of the bypass manifold elimination.

6. WCAP-14036-P-A, Revision 1, was evaluated for response time elimination of VCS installed relays. The solid state protection system (SSPS) slave relays used are either Westinghouse Type AR relays or Potter & Brumfield MDR relays. The SSPS input and master relays are G. P. Clare GP1 series, Midtex/AEMCO 156 or Potter & Brumfield KH series type relays. The bounding response time allocation for ESF functions is the combination of the longest pick-up or drop-out time for each relay in the total circuit signal path for ESF component actuation. Therefore, an additional 36 milliseconds must be allocated for each MDR or AR type separation relay (if installed) between the slave relay and end device.

7. A NLL (lag) card was added after the original design. The time constant is set for 1.0 sec ± 0.1 sec. 1.1 seconds is being added to the allocated time for the process. This time constant is not addressed in the VCS Technical Specification. This time constant is, and will continue to be, verified as part of the channel calibration.

ADDITIONAL TESTING REQUIREMENTS

1. VCS has NLP G05 cards installed in the process system. Time response testing will continue as required on NLP G05 cards to verify the measured response time is less than or equal to the response time allocation for NLP in WCAP-14036.

2. T_{avg} and Delta T signals have NLL cards with the lead-lag set to zero. Time response testing will continue as required for these cards. The measured response time will be added to the allocated time

NO SIGNIFICANT HAZARDS EVALUATION FOR REVISING RESPONSE TIME TESTING 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 change the definitions for 1.12 "Engineered Safety Feature (ESF) Response Time" and 1.26 "Reactor Trip System (RTS) Response Time. These changes will permit the verification of response time, whereas, the current definitions imply the response time must be measured. Additionally, Surveillance Requirements 4.3.1.2 and 4.3.2.2 are being revised to incorporate the philosophy approved in WCAPs 13632-P-A, Revision 2 and 14036-P-A, Revision 1. This change replaces the words "demonstrated" and "tested" with the words "verified" and "verification". Associated Bases changes are made to Section B 3/4.3.1 and B 3/4.3.2.

These changes are applicable for selected components provided both the components and the methodology for verification have previously been reviewed and approved by the NRC.

Background

Instrument response time is, generally, the time span from when a monitored variable exceeds a predetermined setpoint, at the channel sensor, until the actuated device is capable of performing its safety function. Response time testing (RTT) has been an integral part of Technical Specifications (TS) surveillance program to assure the proper functioning of the sensors and instrumentation loops for the ESFAS and the RTS.

The Westinghouse Owners Group performed two analyses to assess the impact of elimination of RTT for instruments and instrument loops. These analyses also discussed alternate test methodologies that would show that the instrumentation was functioning properly. The first of these analyses was Westinghouse Owners Group licensing Topical Report WCAP-13632-P-A, Revision 2, "Elimination of Pressure Sensor Response Time Testing Requirements", which was approved by the NRC on September 5, 1995. The second analysis, WCAP-14036-P-A, Revision 1, "Elimination of Periodic Protection Channel Response Time Tests", was approved by the NRC on October 6, 1998. Both of these documents contain proprietary Westinghouse information. The Safety Evaluations approving these documents stipulated certain conditions that a licensee must meet when implementing the guidelines presented in these documents. These conditions will be satisfied upon implementation of this change.

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?*

   This change to the Technical specifications (TS) does not result in a condition where the design, material, and construction standards that were applicable prior to the change are altered. The same RTS and ESFAS instrumentation is being used; the time response allocations/modeling assumptions in the Final Safety Analysis Report (FSAR) Chapter 15 analyses are still the same; only the method of verifying the time response is changed. The proposed change will not modify any system interface and could not increase the likelihood of an accident since these events are independent of this change. The proposed change will not change, degrade or prevent actions or alter any assumptions previously made in evaluating the radiological consequences of an accident described in the FSAR.

   Therefore, the proposed 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?*

   This change does not alter the performance of process protection racks, Nuclear Instrumentation, and logic systems used in the plant protection systems. These systems will still have response time verified by test before being placed in operational service. Changing the method of periodically verifying instrument for these systems (assuring equipment operability) from response time testing to calibration and channel checks will not create any new accident initiators or scenarios. Periodic surveillance of these systems will continue and may be used to detect degradation that could cause the response time to exceed the total allowance. The total time response allowance for each function bounds all degradation that cannot be detected by periodic surveillance. Implementation of the proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

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

   This change does not affect the total system response time assumed in the safety analysis. The periodic system response time verification method for the process protection racks, Nuclear Instrumentation, and logic systems is modified to allow the use of actual test data or engineering data. The method of verification still provides assurance that the total system response is within that defined in the safety analysis, since calibration tests will continue to be performed and may be used to detect any degradation which might cause the system response time to exceed the total allowance.

The total response time allowance for each function bounds all degradation that cannot be detected by periodic surveillance. Based on the above, it is concluded that the proposed change does not result in a significant reduction in margin with respect to plant safety.

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);

(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 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.

COMMITMENTS TO ENSURE EQUIPMENT OPERABILITY RELATED TO REVISING RESPONSE TIME TESTING 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 change the definitions for 1.12 "Engineered Safety Feature (ESF) Response Time" and 1.26 "Reactor Trip System (RTS) Response Time. These changes will permit the verification of response time, whereas, the current definitions imply the response time must be measured. Additionally, Surveillance Requirements 4.3.1.2 and 4.3.2.2 are being revised to incorporate the philosophy approved in WCAPs 13632-P-A, Revision 2 and 14036-P-A, Revision 1. This change replaces the words "demonstrated" and "tested" with the words "verified" and "verification". Associated Bases changes are made to Section B 3/4.3.1 and B 3/4.3.2.

These changes are applicable for selected components provided both the components and the methodology for verification have previously been reviewed and approved by the NRC.

Background

Instrument response time is, generally, the time span from when a monitored variable exceeds a predetermined setpoint, at the channel sensor, until the actuated device is capable of performing its safety function. Response time testing (RTT) has been an integral part of Technical Specifications (TS) surveillance program to assure the proper functioning of the sensors and instrumentation loops for the ESFAS and the RTS.

The Westinghouse Owners Group performed two analyses to assess the impact of elimination of RTT for instruments and instrument loops. These analyses also discussed alternate test methodologies that would show that the instrumentation was functioning properly. The first of these analyses was Westinghouse Owners Group licensing Topical Report WCAP-13632-P-A, Revision 2, "Elimination of Pressure Sensor Response Time Testing Requirements", which was approved by the NRC on September 5, 1995. The second analysis, WCAP-14036-P-A, Revision 1, "Elimination of Periodic Protection Channel Response Time Tests", was approved by the NRC on October 6, 1998. Both of these documents contain proprietary Westinghouse information. The Safety Evaluations approving these documents stipulated certain conditions that a licensee must meet when implementing the guidelines presented in these documents.

These conditions will be satisfied upon implementation of this change, as described in the following section.

Condition / Response

Condition: Perform a hydraulic RTT prior to installation of a new transmitter/switch or following refurbishment of the transmitter/switch (e.g., sensor cell or variable damping components) to determine an initial sensor specific response time value.

Response: Consistent with the proposed TS changes (including the associated Bases for 4.3.1.2 and 4.3.2.2) and EPRI Report NP-7243, Revision 1, the applicable plant procedures will include revisions which stipulate that pressure sensor response times must be verified by performance of an appropriate response time test prior to placing a sensor into operational service and re-verified following maintenance that may adversely affect sensor response time.

Condition: For transmitters and switches that use capillary tubes, perform an RT after initial installation and after any maintenance or modification activity that could damage the capillary tubes.

Response: Plant procedure revisions (and /or other administrative controls) will stipulate that pressure sensors (transmitters and switches) utilizing capillary tubes, e.g., containment pressure, must be subject to RTT after initial installation and following any maintenance or modification which could damage the transmitter capillary tubes.

Condition: If variable damping is used, implement a method to assure that the potentiometer is at the required setting and cannot be inadvertently changed or perform hydraulic RTT of the sensor following each calibration.

Response: V. C. Summer Nuclear Station does not have any pressure transmitters with installed variable damping for any RTS or ESFAS application which requires RTT. No plant procedures or administrative controls will require revision as a result. Should VCS replace any transmitters in the future with ones having variable damping capability, at that time procedure changes and/or administrative controls will be enacted to assure the variable damping potentiometer cannot be inadvertently changed.

Condition: Perform periodic drift monitoring of all Model 1151, 1152, 1153, and 1154 Rosemount pressure and differential pressure transmitters, for which RTT elimination is proposed, in accordance with the guidance contained in Rosemount Technical Bulletin No. 4 and continue to remain in full compliance with any prior commitments to Bulletin 90-01, Supplement 1, "Loss of Fill-Oil in Transmitters Manufactured by Rosemount," dated December 22, 1992. As an alternative to performing periodic drift monitoring of Rosemount transmitters, Licensees may complete the following actions: (1) ensure that operators and technicians are aware of the Rosemount transmitter loss of fill-oil issue and make provisions to ensure that technicians monitor for sensor response time degradation during the performance of calibrations and functional tests of these transmitters, and (2) review and revise surveillance testing procedures, if necessary, to ensure that calibrations are being performed using equipment designed to provide a step function or fast ramp in the process variable and that calibrations and functional tests are being performed in a manner that allows simultaneous monitoring of both the input and the output response of the transmitter under test, thus allowing, with reasonable assurance, the recognition of significant response time degradation.

Response: VCS provided responses to NRC Bulletins 90-01 and 90-01, Supplement 1, "Loss of Fill-Oil in Transmitters Manufactured by Rosemount" by letters dated July 19, 1990, May 8, 1992, and February 23, 1993. These letters address the position and actions taken with respect to the loss of fill-oil for the Rosemount transmitters.

Condition: Since the performance of RTT is a TS requirement, Licensees referencing WCAP-14036-P-A, Revision 1, must submit a TS amendment to eliminate that requirement for the identified equipment. In that amendment request, the licensee must verify that the failure modes and effects analysis (FMEA) performed by the WOG is applicable to the equipment actually installed in the licensees facility, and that the analysis is valid for the versions of the boards used in the protection system.

Response: Attachment II to this letter includes Tables, which identify the equipment in the various instrument loops for specific protective functions. Note 4 contains a statement that the FMEA provided by the WOG in WCAP-14036-P-A, Revision 1, is applicable to the installed equipment in the population for which this change request is being submitted. The analysis is valid for the versions of circuit boards identified. Additional versions of circuit boards, which are not included in the approved WOG FMEA will not be included in this population. A separate FMEA will be submitted to the NRC at the time these additional boards are requested to be included in this population.