Stephen A. Byrne
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803.345.4622

SCE&G®
A SCANA COMPANY

September 16, 2003
RC-03-0196

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

Dear Sir / Madam:

Subject: VIRGIL C. SUMMER NUCLEAR STATION (VCSNS)
DOCKET NO. 50/395
OPERATING LICENSE NO. NPF-12
RESUBMITTAL OF REQUEST TO USE ALTERNATIVES TO ASME BOILER AND PRESSURE VESSEL CODE, SECTION XI (C-03-0262)
RR-II-15, RR-II-16, RR-II-17, RR-II-19

Reference: S.A. Byrne (SCE&G) letter to Document control Desk (NRC) RC-03-0142, dated July 14, 2003, Request To Use Alternatives To ASME Boiler and Pressure Vessel Code, Section XI,
RR-II-15, RR-II-16, RR-II-17, RR-II-18, RR-II-19, RR-II-20, RR-II-21

In the referenced letter above, South Carolina Electric & Gas Company (SCE&G), submitted a request for relief from performing examination to the criteria of the American Society of Mechanical Engineers (ASME), Section XI.

A meeting between the V. C. Summer Nuclear Station (VCSNS) NRR Project Manager, the NRC technical reviewer, and SCE&G was held on August 8, 2003, at NRR offices. Several issues with the requests were addressed by the NRC which resulted in the decision that SCE&G would resubmit RR-II-15, 16, 17, 19, 20, and 21. RR-II-18 was accepted as submitted.

This letter provides the resubmittal for RR-II-15, 16, 17, and 19. RR-II-20 and 21 will be submitted under a separate transmittal as soon as possible.

SCE&G hereby resubmits the attached requests for using alternatives to the examination requirements of ASME Code, Section XI. SCE&G has determined that the proposed alternatives will provide an acceptable level of quality and safety.

Detailed descriptions of these proposed alternatives, including bases for relief, are included as attachments to this letter. SCE&G requests NRC review and approval of this request by October 1, 2003, so that appropriate changes to the VCSNS Examination Program can be completed to support implementation during refueling outage 14 (RF14), currently scheduled for October 11, 2003.

A047

SCE&G is submitting the attached relief requests in accordance with 10CFR50.55a(a)(3)(i).

Should you have any questions, please call Mr. Ron Clary at (803) 345-4757.

Very truly yours,

Stephen A. Byrne

PER DIRECTION OF S. BYRNE ON 9/16/03

JWT/SAB/dr4
Attachments (4)

c: N. O. Lorick
N. S. Carns
T. G. Eppink (w/o Attachments)
R. J. White
L. A. Reyes
K. R. Cotton
K. M. Sutton
A. R. Caban
NRC Resident Inspector
NSRC
RTS (0-C-03-0262)
File (810.19-2)
DMS (RC-03-0196)

South Carolina Electric & Gas Co. (SCE&G)
Virgil C. Summer Nuclear Station (VCSNS)
Relief Request

RR-II-15

Subject:

This relief request provides alternate requirements for the Reactor Vessel flange to shell weld examination required by Subsection IWA of ASME Code, Section XI, 1989 Edition (henceforth Section XI).

Components:

ASME Code Class 1 Reactor Vessel flange to upper shell weld.

Code Requirement:

ASME Boiler and Pressure Vessel Code, Section XI, Rules for Inservice Inspection of Nuclear Power Plant Components, 1989 Edition with No Addenda: Subsection IWA-2232 requires UT examination of the Reactor Vessel flange to shell weld in accordance with ASME Code Section V, Article 4. Regulatory Guide 1.150, Rev. 1, augments these requirements.

Relief Request:

SCE&G proposes to use an Appendix VIII qualified shell weld procedure for the remote mechanized ultrasonic examination of the Reactor Vessel flange to shell weld from the vessel ID surface in lieu of ASME Section V Article 4.

Alternate Test:

In accordance with 10CFR50.55a(a)(3)(i), SCE&G proposes to use a qualified performance based procedure for the ultrasonic examination of the Reactor Vessel flange to upper shell weld similar to that used for Reactor Vessel shell welds of similar thickness and material composition.

Basis for Relief:

This relief is requested to allow using an Appendix VIII qualified procedure for the remote mechanized examination of the Reactor Vessel flange to shell weld in accordance with ASME Section XI, Division 1, 1995 Edition, 1996 Addenda, Supplements 4 and 6, in lieu of ASME Section V Article 4. Utilizing a remote mechanized examination system will greatly reduce the personnel radiation exposure typically received during the manual performance of this activity.

Although Appendix VIII is not required for this weld, using an examination procedure qualified in accordance with Appendix VIII will provide an increased margin of safety and surpass the quality of the generic examination techniques specified by the referencing Code Edition.

Compliance with these Requirements will assure the requisite level of Quality is maintained.

The September 22, 1999, revision of 10 CFR 50.55(a) required implementation of ASME Section XI, Appendix VIII, Supplements 4 (clad-base metal interface) and Supplement 6 (vessel welds other than clad-base metal interface). Reactor Vessel shell welds are subject to examination in accordance with these supplements, however, the flange to shell weld is the only Reactor Vessel shell weld not included in Appendix VIII.

For the VCSNS Reactor Vessel examination planned for 2003, SCE&G will be employing procedures and equipment qualified by performance demonstration in accordance with ASME Section XI, 1995 Edition, 1996 Addenda as amended by 10CFR50.55(a) October 2000 and WesDyne International "Vendors Technical Basis for Single Side Examinations of Ferritic Reactor Vessel Welds," February 2001.

The Appendix VIII procedure is technically superior to the standard ASME Code, Section V, Article 4 methodologies that are amplitude based. Enhanced performance is possible by (a) increased sensitivity to flaws, (b) demonstrated flaw measurement capability using amplitude independent sizing techniques, and (c) compatibility of the Appendix VIII examination technique with the VCSNS flange to shell weld joint geometry resulting in good ultrasonic beam coverage. An additional benefit is reduction in radiation exposure to the exam team and VCSNS support personnel. This is possible because different examination devices will not have to be installed on the robot just to perform the flange to shell weld exam.

(a) Increased Sensitivity to Flaws: The Appendix VIII procedure is more sensitive to flaws because the exam sensitivity level compares to the ASME DAC level of 5-10 percent DAC. This is the highest practical sensitivity for ultrasonic testing. Previous examinations on the Reactor Vessel shell welds in accordance with ASME Section V were conducted at the less sensitive level of 50 percent DAC for flaws resident in the outer 80 percent of the material thickness and 20 percent DAC for flaws resident from the clad-base metal interface to a depth of about 20 percent thickness.

    The Appendix VIII procedure offers an additional level of assurance in the detection of flaws because the procedure requires that all signals interpreted by the analyst as flaws regardless of response amplitude shall be measured and assessed in accordance with the applicable criteria. The Appendix VIII procedure recognizes that some flaws can exhibit low amplitude response depending on orientation. This evidence has not been factored into the ASME Section V techniques that have traditionally had a flaw response cut-off point of 20 percent DAC.

(b) Demonstrated Flaw Measurement Capability Using Amplitude Independent Sizing Techniques: Westinghouse Procedure PDI-ISI-254, "Remote Inservice Examination of Reactor Vessel Shell Welds," in accordance with ASME Section XI, Appendix VIII, Supplements 4 and 6 was demonstrated in 2001 to the Performance Demonstration Initiative (PDI) at EPRI. (PDQS No. 407)

    The procedure complies with ASME Code, Section XI 1995 Edition, 1996 Addenda as modified by the final rule. The procedure was qualified using amplitude independent sizing techniques such as tip diffraction measurement and sizing by measurement of the flaw secondary response signals (a proven method for volumetric-type defects). The amplitude

based flaw bounding criteria specified in ASME Section V procedures has been proven inaccurate as the size of the reflection is measured which may or may not accurately reflect true flaw size.

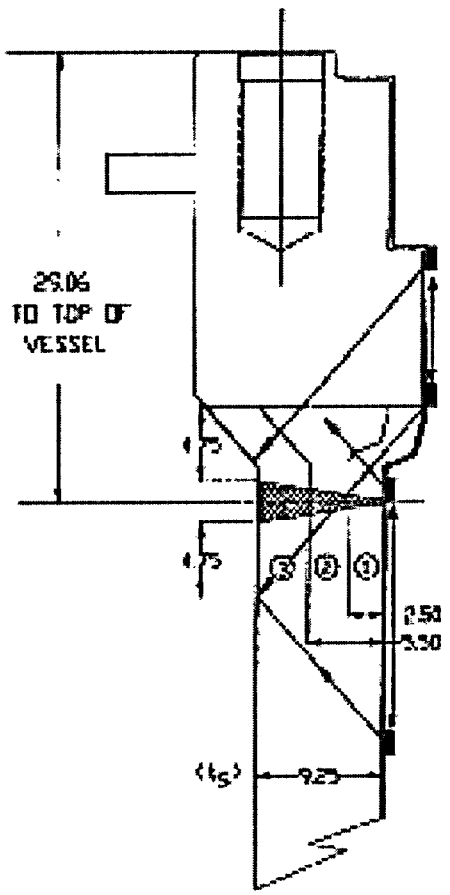
(c) Compatibility of the Appendix VIII Technique to the VCSNS Flange to Shell Weld Joint and Synergy with the Previous Examination. The Appendix VIII shell weld examination procedure requires the use of one beam angle, 45 degrees, applied to the weld and volume using 3 different transducer types each covering a specified depth range. The procedure requires the exam volume to be crosshatched with sound beams in four orthogonal directions. The increment size is 0.5 inch. Coverage is estimated in the attached sketch. From the sketch, the critical inner 15 percent is well interrogated with the exception of area directly beneath the curved surface above the weld. This is a common limitation for the flange to shell weld joint.

The last remote mechanized exam of the flange to shell weld was conducted in 1993. At that time 45, 60 and 70 degree exam angles were used, and the results were acquired and analyzed using an automated ultrasonic exam system. The increment size was 0.5 inch, and the exam method was contact. Results from the exam were that no indications were found exceeding the allowable limits of Section XI. There is excellent data archival from the 1993 exam, and SCE&G is confident that reasonable comparisons can be made with the Appendix VIII examination if any questions arise concerning indications.

SCE&G will ensure that the flange to shell weld of the VCSNS Reactor Vessel will be examined with proven qualified ultrasonic examination techniques in lieu of standard amplitude based ultrasonic examination techniques currently specified. Examinations will be conducted to the maximum extent practical in four orthogonal directions. The examination sensitivity and flaw measurement capability of the proposed alternative are superior to the method prescribed and coverage will be good considering the difficult geometric presentation.

Implementation Schedule:

This relief will be implemented during the current second interval at VCSNS as required by ASME Code, Section XI, 1989 Edition. Implementation period will be from October 1, 2003 to December 31, 2003.



V.C.SUMMER REACTOR VESSEL FLANGE TO SHELL WELD
ANTICIPATED COVERAGE USING APPENDIX VIII QUALIFIED
TECHNIQUES.

ZONES 1,2 AND 3 ARE MAXIMUM DEPTH COVERAGES FOR SPECIFIC
TRANSDUCERS ACCORDING TO WesDyne PROCEDURE PDI-ISI-254 REV. 5

ZONE 1 - CLAD BASE METAL INTERFACE TO A DEPTH OF 2.5"
ZONE 2 - 2.5" DEEP TO JET (.35")
ZONE 3 - 3.5" TO OUTSIDE DIAMETER SURFACE

DUAL DIRECTION COVERAGE

ZONE 1 - WELD 23%, VOLUME 4%
ZONE 2 - WELD 73%, VOLUME 72%
ZONE 3 - WELD 100%, VOLUME 45%

SINGLE DIRECTION COVERAGE

ZONE 1 - WELD 77%, VOLUME 6%
ZONE 2 - WELD 27%, VOLUME 10
ZONE 3 - VOLUME 55%

SUM OF ALL COVERAGES:

WELD 100%, VOLUME 79%

V.C. SUMMER	REACTOR VESSEL SCAN PLAN
WesDyne International	
SHEET TITLE	WELD COVERAGE
APPENDIX VIII TECHNIQUES	
ALL DIMENSIONS IN INCHES UNLESS OTHERWISE NOTED	SHEET 1 OF 1

South Carolina Electric & Gas Co. (SCE&G)
Virgil C. Summer Nuclear Station (VCSNS)
Relief Request

RR-II-16

Subject:

This relief request provides alternate requirements for the Reactor Vessel to shell weld examination required by Subsection IWA of ASME Code, Section XI, 1989 Edition (henceforth Section XI).

Components:

ASME Code Class 1 Reactor Vessel nozzle to shell welds.

Code Requirement:

ASME Boiler and Pressure Vessel Code, Section XI, Rules for Inservice Inspection of Nuclear Power Plant Components, 1989 Edition with No Addenda: Table IWB-2500-1 Code Item B3.90, Figures IWB-2500-7 (a) and (b) for defining the examination volume of the VCSNS Reactor Vessel nozzle to shell welds. The examination requirements for Reactor Vessel nozzle to shell welds are defined in the ASME Code, Section XI, Appendix VIII, Supplements 4, 6 and 7, 1995 Edition, 1996 Addenda as modified by 10 CFR 50.55a. Six (6) Reactor Vessel nozzle to shell welds, 3 inlet and 3 outlet, are planned for examination in 2003 as follows:

Weld CGE-1-1100A-18 at 25 degree vessel azimuth
Weld CGE-1-1100A-19 at 95 degree vessel azimuth
Weld CGE-1-1100A-20 at 145 degree vessel azimuth
Weld CGE-1-1100A-21 at 215 degree vessel azimuth
Weld CGE-1-1100A-22 at 265 degree vessel azimuth
Weld CGE-1-1100A-23 at 325 degree vessel azimuth

Relief Request:

SCE&G requests relief from the ts/2 examination volume requirements of ASME Section XI, Figures IWB-2500-7 (a) and (b).

Alternate Test:

In accordance with 10CFR50.55a(a)(3)(i), SCE&G proposes relief from the ts/2 examination volume and instead proposes examination of the base material volume extending 1/2 inch from each side of the weld. This refined examination volume is defined in detail within Code Case N-613-1. The VCSNS primary nozzles are similar to the barrel type nozzles depicted in Figure 1 of attached Code Case N-613-1 and attached WesDyne sketch.

Basis for Relief:

The examination volumes for the Reactor Vessel nozzle to vessel welds are unnecessarily large. For the VCSNS Reactor Vessel, the nozzle to shell volume would extend about 5 inches into the nozzle forging and the same distance into the upper shell course forging. This proposed alternative would re-define the examination volume boundary to 1/2 inch of base metal on each side of the thickest portion of the weld. This reduction in base metal inspection will not affect the flaw detection capabilities in the weld and heat affected zone.

Compliance with these requirements will assure the requisite level of quality and safety is maintained.

The proposed reduction in exam volume is base metal only, extensively interrogated by ultrasonic examination during fabrication, preservice examinations and inservice examinations performed in 1993. In 1993, the data was acquired, archived and analyzed using automated ultrasonic systems, and SCE&G is confident that reasonable comparisons can be made between the past and present if necessary. During previous examinations, no indications exceeding the allowable limits of the preservice and inservice criteria were found in the six-Reactor Vessel nozzle to shell examination volumes including the base metal areas proposed for exclusion from examination in this request. The 1993 results were based on examinations performed in accordance with the ASME Code, Section XI, Section V and Regulatory Guide 1.150, Rev. 1.

The Section XI examination volume for the pressure-retaining nozzle to shell welds extends from the edge of the weld to include a significant portion of the nozzle forging body (inward) and Reactor Vessel upper shell course (outward) which is a forged ring. The large volume results in a significant increase in examination time with no corresponding increase in safety as the greatest portion of the volume is base material not prone to inservice cracking.

The implementation of this request for relief would reduce the examination volume next to the widest portion of the weld from half the vessel wall thickness to ½ inch from the weld. This reduction applies only to base metal and not the stressed areas of the nozzle to shell weld.

SCE&G shall ensure that the high stressed areas of the VCSNS Reactor Vessel nozzle to shell welds shall be included in the examination. The examinations shall consist of techniques and procedures qualified in accordance with the ASME Code, Section XI, Appendix VIII, and supplements 4, 6 and 7. The weld and surrounding ½ inch volume will be interrogated from the nozzle bore using techniques and procedures specifically qualified to inspect the nozzle to shell weld from the nozzle bore. These procedures were qualified in January 2003 in accordance with Appendix VIII, Supplement 7 as administered by the PDI.

The nozzle to shell examination volume is also accessible from the vessel ID surface and will be examined in four orthogonal directions for the first 15 percent of weld thickness with respect to the vessel ID surface using Appendix VIII, Supplement 4 qualified techniques. The remaining 85 percent of weld volume accessible from the vessel ID surface will be examined in two opposing circumferential scanning directions using Appendix VIII, Supplement 6 qualified techniques to interrogate for transverse defects.

This combination of scans addresses the requirements set forth by the ASME Code, Section XI, 1995 Edition with 1996 Addenda as modified by 10CFR50.55a and assures that current qualified technology will be applied to the re-defined examination volume specified herein to the maximum extent practical. Compliance with these requirements will assure the requisite level of quality and safety is maintained.

Implementation Schedule:

This relief will be implemented during the current second interval at VCSNS as required by ASME Code, Section XI, 1989 Edition. Implementation period will be from October 1, 2003 to December 31, 2003.

CASE
N-613-1

CASES OF ASME BOILER AND PRESSURE VESSEL CODE

Approval Date: August 20, 2002

See Numeric Index for expiration and any reaffirmation dates.

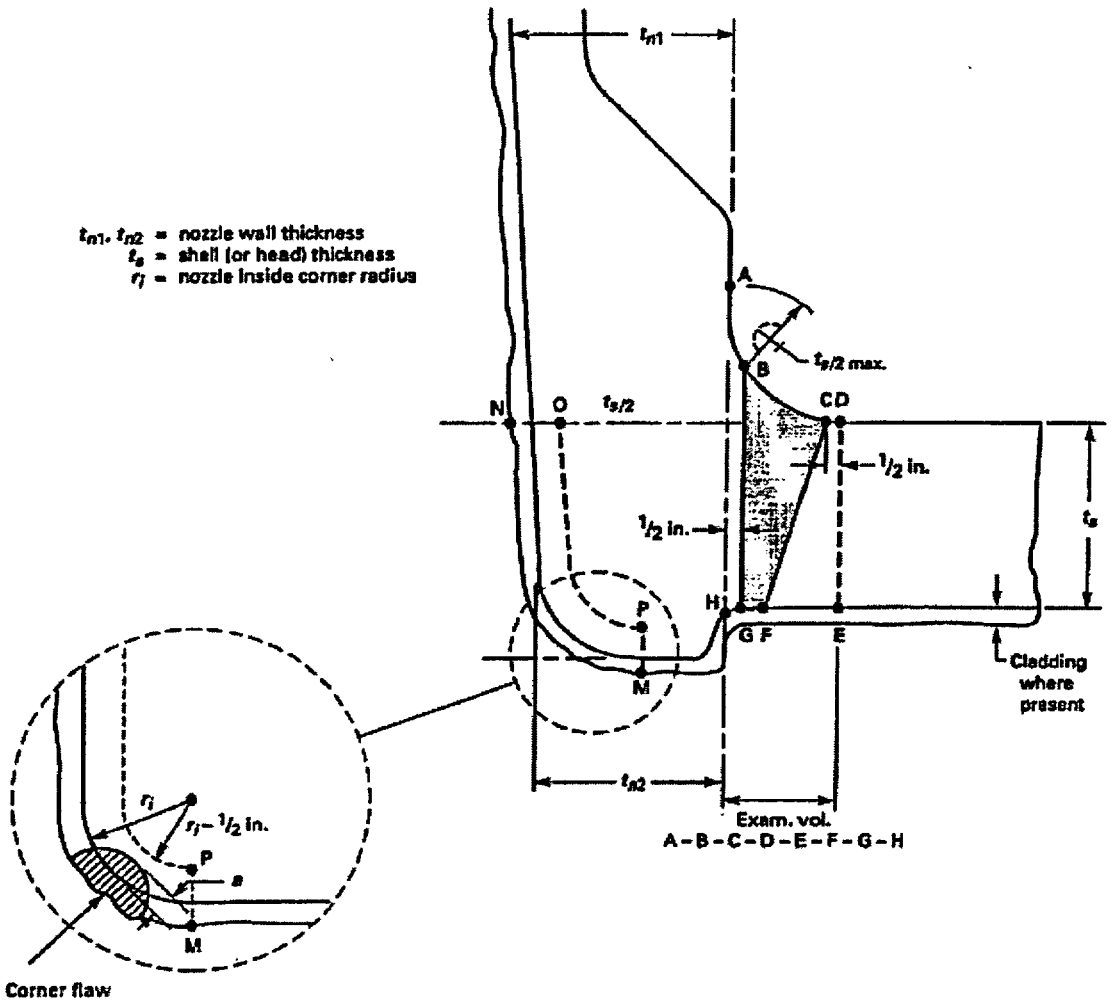
Case N-613-1
Ultrasonic Examination of Full Penetration Nozzles in Vessels, Examination Category B-D, Item No's. B3.10 and B3.90, Reactor Nozzle-To-Vessel Welds, Figs. IWB-2500-7(a), (b), and (c) Section XI, Division 1

Inquiry: What alternatives to the examination volume requirements of Figs. IWB-2500-7(a), (b), and (c) are permissible for ultrasonic examination of reactor-nozzle-to-vessel welds?

Reply: It is the opinion of the Committee that Category B-D nozzle-to-vessel welds previously ultrasonically examined using the examination volumes of Figs. IWB-2500-7(a), (b), and (c) may be examined using the reduced examination volume (A-B-C-D-E-F-G-H) of Figs. 1, 2, and 3.

CASE (continued)

N-613-1



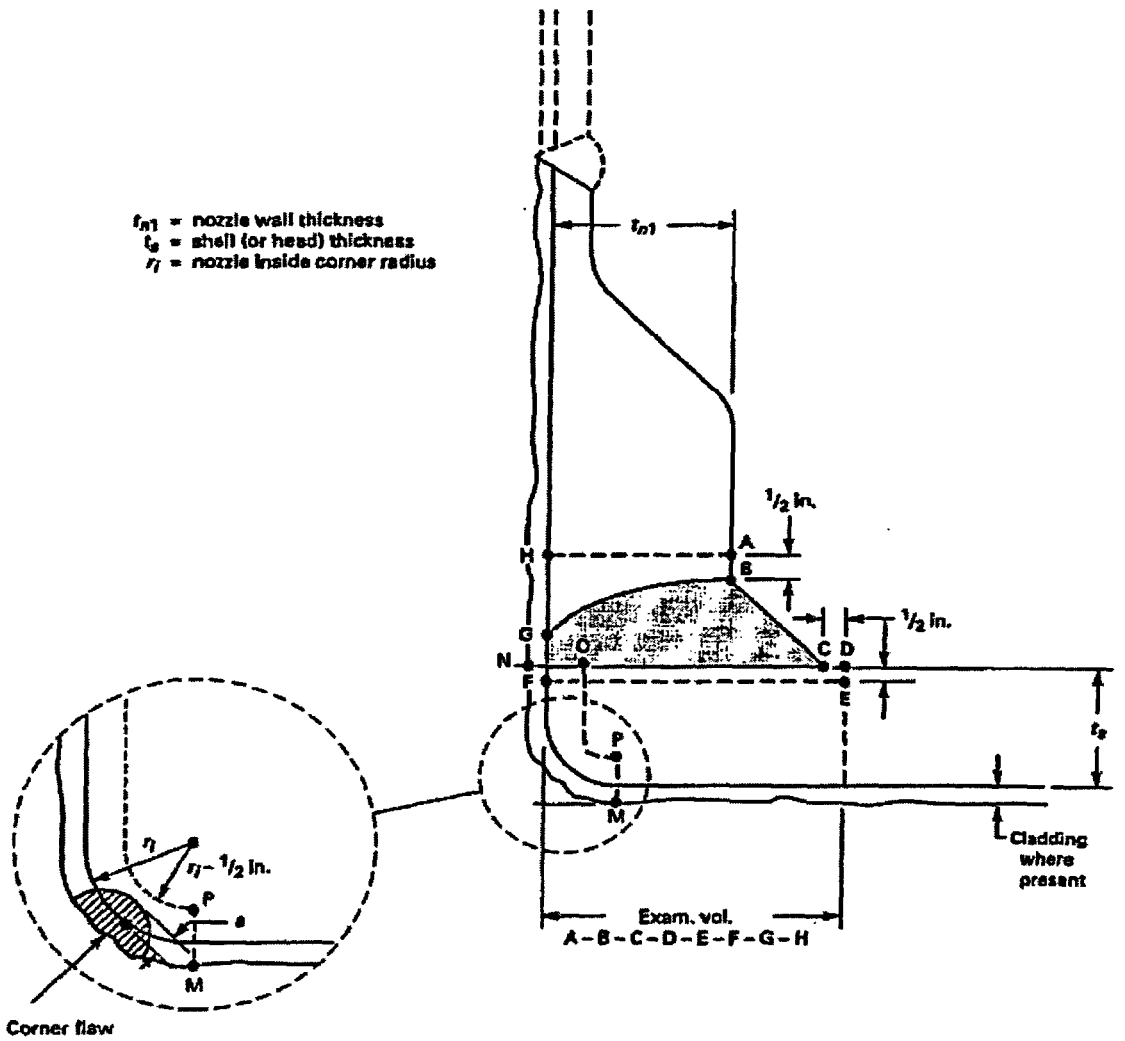
EXAMINATION REGION [Note (1)]	EXAMINATION VOLUME [Note (2)]
Shell (or head) adjoining region	C-D-E-F
Attachment weld region	B-C-F-G
Nozzle cylinder region	A-B-G-H
Nozzle inside corner region	M-N-O-P

NOTES:
(1) Examination regions are identified for the purpose of differentiating the acceptance standards in NB-3512.
(2) Examination volumes may be determined either by direct measurements on the component or by measurements based on design drawings.

FIG. 1 NOZZLE IN SHELL OR HEAD
(Examination Zones in Barrel Type Nozzles Joined by Full Penetration Corner Welds)

CASE (continued)

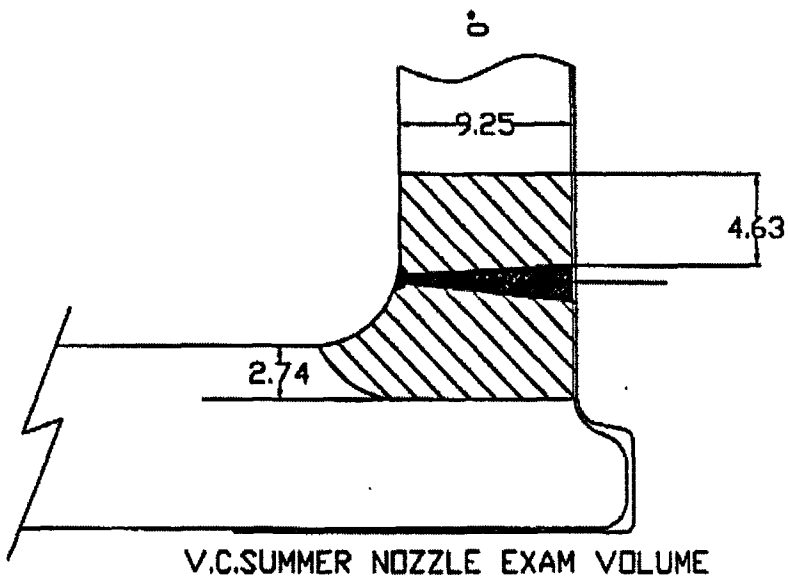
N-613-1



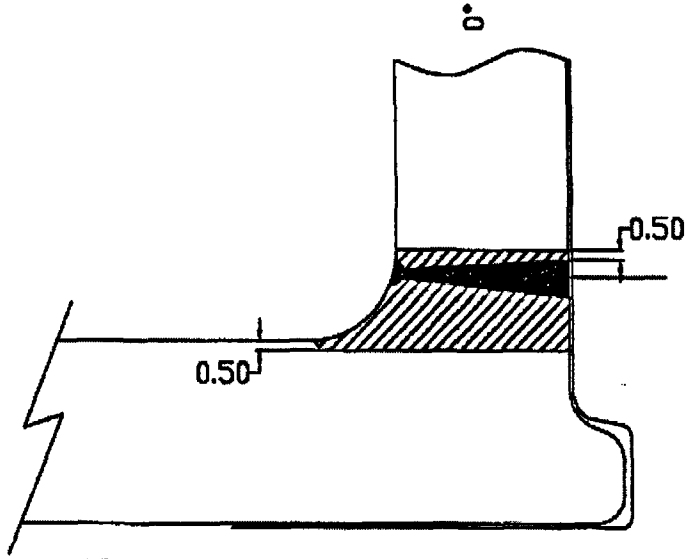
EXAMINATION REGION (Note (1))	EXAMINATION VOLUME (Note (2))
Shell (or head) adjoining region	C-D-E-F-G
Attachment weld region	B-C-G
Nozzle cylinder region	A-B-G-H
Nozzle inside corner region	M-N-O-P

NOTES:
(1) Examination regions are identified for the purpose of differentiating the acceptance standards in IWB-3512.
(2) Examination volumes may be determined either by direct measurements on the component or by measurements based on design drawings.

FIG. 3 NOZZLE IN SHELL OR HEAD
(Examination Zones in Set-On Type Nozzles Joined by Full Penetration Corner Welds)



V.C.SUMMER NOZZLE EXAM VOLUME
SECTION XI



V.C SUMMER NOZZLE EXAM VOLUME
PER N-613-1

V.C. SUMMER	
WesDyne International	
SHEET TITLE	OUTLET NOZZLE TO SHELL WELD
PROPOSED NOZZ VOLUME	
ALL DIMENSIONS IN INCHES UNLESS OTHERWISE NOTED	SHEET 11 OF 23

South Carolina Electric & Gas Co. (SCE&G)
Virgil C. Summer Nuclear Station (VCSNS)
Relief Request

RR-II-17

Subject:

This relief request provides alternate requirements for the Reactor Vessel primary nozzle inner radii examination required by Subsection IWB of ASME Code, Section XI, 1989 Edition (henceforth Section XI).

Components:

ASME Code Class 1 Reactor Vessel primary nozzle inner radii.

Code Requirement:

ASME Boiler and Pressure Vessel Code, Section XI, Rules for Inservice Inspection of Nuclear Power Plant Components, 1989 Edition with No Addenda: Table IWB-2500-1, Item No. B3.20 specifies volumetric examination for Reactor Vessel nozzle inside radius section. The boundary of the examination volume is depicted in Figure IWB-2500-7(a). Six Reactor Vessel nozzle inner radius examinations, three inlet and three outlet, are planned for examination in 2003 as follows:

IR CGE-1-1100A-18IR at 25 degree vessel azimuth
IR CGE-1-1100A-19IR at 95 degree vessel azimuth
IR CGE-1-1100A-20IR at 145 degree vessel azimuth
IR CGE-1-1100A-21IR at 215 degree vessel azimuth
IR CGE-1-1100A-22IR at 265 degree vessel azimuth
IR CGE-1-1100A-23IR at 325 degree vessel azimuth

Relief Request:

Relief is requested from the Code required volumetric examination.

Alternate Test:

SCE&G proposes to perform a visual examination. The required visual coverage will be essentially 100 percent (greater than 90 percent for each nozzle) of the surface M-N as shown in Figure IWB-2500-7(a) of the 1989 Edition of ASME Code Section XI in lieu of the volumetric examinations required by Table IWB-2500-1, Examination Category B-D, Item B3.100 of ASME Code, Section XI.

The equipment will use the required lighting and magnification to detect a 0.001 inch (1 mil) wire. The camera operators will be trained to the use and control of the equipment. The examination will be demonstrated with a resolution standard that will have the 0.001 inch (1 mil) wire in a holder that will be placed in the water. The resolution standard will be resolved at the minimum and maximum distance from the camera to the resolution standard, along with the lighting used during the examination. This resolution demonstration will be recorded, along with the examination on a video tape or similar permanent storage medium. These alternatives are consistent with accepted Code Case N-619 (noted in Regulatory Guide 1.147).

In accordance with 10CFR50.55a(a)(3)(i), SCE&G proposes relief from the ts/2 examination volume and instead proposes examination of the base material volume extending 1/2 inch from each side of the weld. This refined examination volume is defined in detail within Code Case N-613-1.

Basis for Relief:

This relief is requested to allow the use of an alternative methodology for the examination of the VCSNS reactor pressure vessel primary nozzle inner radius. This proposed alternative is consistent with SCE&G, vendor and regulatory objectives in implementing a comparatively sensitive replacement for a volumetric examination requirement. In addition to technical equivalency, this alternative method has merit in the reduction of time and radiation exposure.

SCE&G believes that reliable ultrasonic examinations of the inner radius volume have been performed from inside the Reactor Vessel at VCSNS with advanced robotic equipment and ultrasonic exam procedures. No prior indications have been reported at VCSNS or in any PWR inner radii examinations in the last 10 years.

A review of records at VCSNS revealed no ultrasonic indications reported in the preservice exam in 1980 and the first interval inservice examination in 1993. The 1993 volumetric examination was conducted in accordance with ASME Section XI as augmented by RG 1.150. Automated ultrasonic equipment was used for the acquisition and data analyzed by qualified level III personnel. Examination sensitivity was established using 0.125 inch diameter side drilled holes at depths representing the inner radius exam volume depth. Transducers were industry standard dual element shallow angle longitudinal wave units directing the sound clockwise and counterclockwise around the nozzle openings. Transducers were delivered to the surface using an advanced compliant surface-tracking robot.

The substitution of ultrasonic examinations with remote visual examinations for the RV inner radii was first proposed in 1999 and subsequently three meetings were held between SCE&G/vendor representatives and NRC personnel. At the conclusion of those meetings, there was a consensus that visual examination capabilities presented a viable alternative to the volumetric method, particularly in the PWR vessels with no history of indications and generous space available for remote visual examination equipment after removal of the core barrel. SCE&G has confidence that Reactor Vessel nozzle degradation in the form of hairline surface cracking can be detected by the enhanced visual exam approach proposed and that the proposed alternative will result in an acceptable level of quality and safety.

Implementation Schedule:

This relief will be implemented during the current second interval at VCSNS as required by ASME Code, Section XI, 1989 Edition. Implementation period will be from October 1, 2003 to December 31, 2003.

South Carolina Electric & Gas Co. (SCE&G)
Virgil C. Summer Nuclear Station (VCSNS)
Relief Request

RR-II-19

Subject:

This relief request will allow SCE&G to use the root mean square (RMS) value of 10CFR50.55a(b)(2)(xv)(C)(1), which modifies the depth sizing criteria of ASME Code, Section XI, 1995 Edition, 1996 Addenda, Appendix VIII, Supplement 4, Subparagraph 3.2(a), in lieu of Subparagraph 3.2(c).

Components:

ASME Code Class 1 Reactor Vessel shell and head welds (Examination Category B-A, Items B1-10 and B1-20).

Code Requirement:

ASME Code, Section XI, Appendix VIII, Supplement 4, Subparagraph 3.2(c), states that the UT performance demonstration results must be plotted on a two-dimensional plot with the measured depth plotted along the ordinate axis and the true depth plotted along the abscissa axis. For qualification, the plot must satisfy the following statistical parameters: (1) slope of the linear regression line is not less than 0.7, (2) the mean deviation of flaw depth is less than 0.25 inches, and (3) correlation coefficient is not less than 0.70.

Relief Request:

Relief is requested to allow SCE&G to use the root mean square (RMS) value of 10CFR50.55a(b)(2)(xv)(C)(1), which modifies the depth sizing criteria of ASME Code, Section XI, 1995 Edition, 1996 Addenda, Appendix VIII, Supplement 4, Subparagraph 3.2(a), in lieu of Subparagraph 3.2(c).

Alternate Test:

Pursuant to 10CFR50.55a(a)(3)(i), SCE&G proposes an alternative to use the RMS value of 10CFR50.55a(b)(2)(xv)(C)(1), which modifies the depth sizing criterion of ASME Code, Appendix VIII, Supplement 4, Subparagraph 3.2(a) in lieu of Subparagraph 3.2(c).

Basis for Relief:

ASME Code, Section XI, Appendix VIII, supplement 4, Subparagraph 3.2(c) imposes three statistical parameters for depth sizing. The first parameter, 3.2(c)(1), pertains to the scope of a linear regression line. The linear regression line is the difference between actual versus true value plotted along a through-wall thickness. For Supplement 4 performance demonstrations, a linear regression line of the data is not applicable because the performance demonstrations are performed on test specimens with flaws located in the 15-percent through-wall. The differences between actual versus true value produce a tight grouping of results, which resemble a shotgun pattern. The slope of a regression line from such data is extremely sensitive to small variations, thus making the parameter of 3.2(c)(2), an inappropriate criterion. The second parameter, 3.2(c)(2), pertains to the mean deviation of flaw depth. The value used in the Code is too lax with respect to evaluating flaw depths within the inner 15 percent of wall thickness. Therefore, SCE&G proposes to use the more appropriate criterion of 0.15 inch RMS of 10CFR50.55a(b)(2)(xv)(C)(1), which modifies Subparagraph 3.2(a), as the acceptance criterion. The third parameter, 3.2(c)(3), pertains to a correction coefficient. The value of the correction coefficient in Subparagraph 3.2(c)3) is inappropriate for this application since it is based on the linear regression from Subparagraph 3.2(c)(1).

SCE&G believes the proposed alternative to use the RMS value of 10CFR50.55a(b)(2)(xv)(C)(1), which modifies the criterion of ASME Code, Appendix VIII, Supplement 4, Subparagraph 3.2(a), in lieu of Subparagraph 3.2(c), will provide an acceptable level of quality and safety.

Implementation Schedule:

This relief will be implemented during the current second interval at VCSNS as required by ASME Code, Section XI, 1989 Edition. Implementation period will be from October 1, 2003 to December 31, 2003.