ATTACHMENT 1

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
OF THE SECOND TEN-YEAR INTERVAL INSERVICE INSPECTION
REQUESTS FOR RELIEF
FOR
VIRGINIA ELECTRIC AND POWER COMPANY
SURRY POWER STATION, UNITS 1 AND 2
DOCKET NUMBERS: 50-280 AND 50-281

1.0 INTRODUCTION

The Technical Specifications for Surry Power Station, Units 1 and 2, state that the inservice inspection and testing of the American Society of Mechanical Engineers (ASME) Code Class 1, 2, and 3 components shall be performed in accordance with Section XI of the ASME Boiler and Pressure Vessel Code and applicable Addenda as required by 10 CFR 50.55a(g), except where specific written relief has been granted by the Commission pursuant to 10 CFR 50.55a(g)(6)(i). 10 CFR 50.55a(a)(3) states that alternatives to the requirements of paragraph (g) may be used, when authorized by the NRC, if (i) the proposed alternatives would provide an acceptable level of quality and safety, or (ii) compliance with the specified requirements would result in hardship or unusual difficulties without a compensating increase in the level of quality and safety.

Pursuant to 10 CFR 50.55a(g)(4), ASME Code Class 1, 2, and 3 components (including supports) shall meet the requirements, except the design and access provisions and the preservice examination requirements, set forth in the ASME Code, Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," to the extent practical within the limitations of design, geometry, and materials of construction of the components. The regulations require that inservice examination of components and system pressure tests conducted during the first ten-year interval and subsequent intervals comply with the requirements in the latest edition and addenda of Section XI of the ASME Code incorporated by reference in 10 CFR 50.55a(b) on the date twelve months prior to the start of the 120-month interval, subject to the limitations and modifications listed therein. The applicable edition of Section XI of the ASME Code for the Surry Power Station, Units 1 and 2, second 10-year inservice inspection (ISI) Interval is the 1980 Edition, through

Winter 1980 Addenda. The components (including supports) may meet the requirements set forth in subsequent editions and addenda of the ASME Code incorporated by reference in 10 CFR 50.55a(b) subject to the limitations and modifications listed therein and subject to Commission approval.

Pursuant to 10 CFR 50.55a(g)(5), if the licensee determines that conformance with an examination requirement of Section XI of the ASME Code is not practical for its facility, information shall be submitted to the Commission in support of that determination and a request made for relief from the ASME Code requirement. After evaluation of the determination, pursuant to 10 CFR 50.55a(g)(6)(i), the Commission may grant relief and may impose alternative requirements that are determined to be authorized by law, will not endanger life, property, or the common defense and security, and are otherwise in the public interest, giving due consideration to the burden upon the licensee that could result if the requirements were imposed. In a letter dated June 8, 1993 the licensee, Virginia Electric and Power Company requested relief from the requirements of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code Section XI that it determined to be impractical to perform at the Surry Power Station, Units 1 and 2.

2.0 EVALUATION AND CONCLUSIONS

The staff, with technical assistance from its contractor, the Idaho National Engineering Laboratory (INEL), has evaluated the information provided by the licensee in support of its Requests for Relief Nos. SR-018, SR-019 (Unit 1), and SR-020 (Unit 2). Based on the information submitted, the staff adopts the contractor's conclusions and recommendations presented in the Technical Evaluation Summary attached. Pursuant to 10 CFR 50.55a(g)(6)(i), the requirements of the Code are impractical therefore, relief is granted for all parts of Requests for Relief SR-018 (Unit 1), SR-019, (Unit 1), and SR-020 (Unit 2). Such relief is authorized by law and will not endanger life, property, or the common defense and security, and is otherwise in the public interest. This relief has been granted giving due consideration to the burden upon the licensee that could result if the requirements were imposed on the facility.

ATTACHMENT 2

TECHNICAL EVALUATION SUMMARY OF THE SECOND TEN-YEAR INTERVAL INSERVICE INSPECTION REQUESTS FOR RELIEF SR-018, SR-019 (UNIT 1) AND SR-020 (UNIT 2) FOR VIRGINIA ELECTRIC AND POWER COMPANY SURRY POWER STATION, UNITS 1 AND 2 DOCKET NUMBERS: 50-280 AND 50-281

1.0 INTRODUCTION

By letter dated June 8, 1993, the licensee, Virginia Electric and Power Company, requested relief from the requirements of American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code Section XI. The Idaho National Engineering Laboratory (INEL) staff has evaluated the information provided by the licensee in support of these requests in the following section.

2.0 EVALUATION

The information provided by the licensee in support of the requests for relief has been evaluated and is documented below. Surry Power Station's second 10-year inservice inspection (ISI) interval began December 22, 1982 for Unit 1 and May 1, 1983 for Unit 2. Based on these dates, the applicable edition of Section XI of the ASME Code for the second 10-year ISI interval is the 1980 Edition through Winter 1980 Addenda (80W80) for both units. To complete the Code-required examinations for the interval, the second 10-year ISI interval was extended by one year for both units as permitted by the Code.

A. Request for Relief No. SR-018 -- Part 1 (Unit 1) , Examination Category B-A, Item B1.40, Reactor Pressure Vessel (RPV) Head-to-Flange Weld

Code Requirement: Table IWB-2500-1, Examination Category B-A, Item B1.40, requires 100% surface and volumetric examinations for RPV head-to-flange welds as defined by Figure IWB-2500-5.

Licensee's Code Relief Request: The licensee requested relief from performing the volumetric examination of RPV head-to-flange Weld 1-01 (Drawing # 11448-WMKS-R-1.2) to the extent required by the Code. The ultrasonic examination coverage achieved for this weld is summarized below.

Ultrasonic Examination Coverage

Beam Angle	Scan Direction	% Completed	Reason for incomplete coverage
0	-	82 Weld & Base	Interference from flange and lifting lug
45	2	38 Weld	
45	5	100 Weld	
45	7	100 Weld	
45	8	100 Weld	
60	2	19 Weld	
60	5	100 Weld	
60	7	100 Weld	
60	8	100 Weld	
45 & 60	2	45 Base	
45 & 60	5	96 Base	
45 & 60	7	82 Base	
45 & 60	8	82 Base	

Scan Direction Key:
2 - Axial scan from flange side
5 - Axial scan from head side
7 - Circumferential scan, clockwise
8 - Circumferential scan, counterclockwise

Licensee's Stated Basis for Requesting Relief:

"The 1980 Edition, Winter 1980 Addenda (inclusive) of ASME Section XI in Table IWB-2500-1 and IWC-2500-1 does not allow any limitations to the required volumetric [and surface] examinations. Code Case N-460, Alternative Examination Coverage for Class 1 and Class 2 Welds, allows a reduction in coverage, if it is less than 10%.

The components listed above have been examined to the extent practical as required by the Code. Due to interferences of other components or weld joint geometry the reduction in coverage for the listed component was greater than 10%. Table SR-018-1 [paraphrased above] and 2 [not applicable] are provided detailing the limitations experienced. Amplifying sketches or drawings are also provided. Alternative components were not substituted for examination due to the mandatory selection requirements of the Code, or because the examination coverage attained was representative of what could be expected for that type of configurations."

Licensee's Proposed Alternative Examination: No alternative to the Code requirements was proposed. The Code-required volumetric examination was performed to the extent practical.

Evaluation: The Code requires 100% surface and volumetric examination of the RPV head-to-flange weld. However, volumetric examination of the subject weld is impractical to perform to the extent required by the Code due to limitations caused by component geometry and adjacent lifting lugs. Design modifications of the RPV head would be needed to improve access to the weld to permit examination of the Code-required volume. Imposition of this requirement would cause a considerable burden on the licensee.

The licensee has examined a significant portion of the weld and adjacent base metal. In addition, the Code-required surface examination has been completed. Therefore, any existing pattern of degradation should have been detected by the limited examination, and reasonable assurance of the RPVs operational readiness has been maintained.

Considering the impracticality of meeting the Code requirements and the extent of examinations that were completed, it is recommended that relief be granted pursuant to 10 CFR 50.55a(g)(6)(i).

B. Request for Relief No. SR-018 -- Part 2 (Unit 1), Examination Category B-J, Item B9.11, Circumferential Pipe Weld

Code Requirement: Table IWB-2500-1, Examination Category B-J, Item B9.11, requires 100% surface and volumetric examination, as defined by Figure IWB-2500-8, for circumferential piping welds greater than or equal to 4 inch nominal pipe size (NPS) that are selected for examination.

Licensee's Code Relief Request: The licensee has requested relief from performing the volumetric examination of Class 1 circumferential pipe Weld 1-14 (Drawing # 11448-WMKS-0102AZ-1) to the extent required by the Code. Coverage that has been achieved is summarized below.

Ultrasonic Examination Coverage

Weld #	Axial Coverage	Circumferential Coverage	Reason for Partial Examination
1-14	2 - 99% 5 - 0%	100**	Valve-to-pipe joint configuration/ V-path could not be extended due to cast austenitic material

** -- Coverage in both directions
2 -- Axial scan, upwards
5 -- Axial scan, downwards

Licensee's Stated Basis for Requesting Relief:

"The 1980 Edition, Winter 1980 Addenda (inclusive) of ASME Section XI in Table IWB-2500-1 and IWC-2500-1 does not allow any limitations to the required volumetric [and surface] examinations. Code Case N-460, Alternative Examination Coverage for Class 1 and Class 2 Welds, allows a reduction in coverage, if it is less than 10%.

The component listed above has been examined to the extent practical as required by the Code. Due to interferences of other components or weld joint geometry the reduction in coverage for the listed component was greater than 10%. Table SR-018-1 [not applicable] and 2 [paraphrased above] are provided detailing the limitations experienced. Amplifying sketches or drawings are also provided. Alternative components were not substituted for examination due to the mandatory selection requirements of the Code, or because the examination coverage attained was representative of what could be expected for that type of configurations."

Licensee's Proposed Alternative Examination: No alternative to the Code requirements was proposed. The Code-required volumetric examination was performed to the extent practical.

Evaluation: The Code requires 100% surface and volumetric examination of the subject weld. However, examination from the valve side is not possible because of the pipe-to-valve configuration, and full V-path coverage from the pipe side is not possible due to the attenuation of the cast austenitic material. Therefore, the 100% volumetric examination is impractical to perform on Weld 1-14. In order to meet the Code requirements, the weld joint would have to be redesigned and replaced, which is a considerable burden on the licensee.

The licensee has completed a significant portion (approximately 75%) of the Code-required volumetric examination and 100% of the Code-required surface examination. In addition, this weld is part of a large population of welds that is receiving 100% volumetric examination. Therefore, generic degradation should have been detected and reasonable assurance of the operational readiness of the subject piping system has been provided.

Considering the impracticality of performing the 100% volumetric examination and the extent of examinations that are being performed on this and similar welds, it is recommended that relief be granted pursuant to 10 CFR 50.55a(g)(6)(i).

C. Request for Relief No. SR-018 -- Part 3 (Unit 1), Examination Category B-K-1, Item B10.10, Integrally Welded Attachments to Piping

Code Requirement: Table IWB-2500-1, Examination Category B-K-1, Item B10.10, requires volumetric or surface examinations (as applicable) of integrally welded attachments as defined by Figure IWB-2500-13, -14, or -15.

Licensee's Code Relief Request: The licensee has requested relief from performing the surface examinations of integrally welded Attachments H003-1 and H003-2 (Drawing # 11448-WMKS-0102AZ-1) to the extent required by the Code. Examination coverage of the subject integral attachment welds that has been achieved is summarized below.

Surface Examination Coverage

Weld #	Coverage	Reason for partial coverage
H003-1	50%	Support configuration
H003-2	50%	Support configuration

Licensee's Stated Basis for Requesting Relief:

"The 1980 Edition, Winter 1980 Addenda (inclusive) of ASME Section XI in Table IWB-2500-1 and IWC-2500-1 does not allow any limitations to the required [volumetric and] surface examinations. Code Case N-460, Alternative Examination Coverage for Class 1 and Class 2 Welds, allows a reduction in coverage, if it is less than 10%.

"The component listed above has been examined to the extent practical as required by the Code. Due to interferences of other components or weld joint geometry the reduction in coverage for the listed component was greater than 10%. Table SR-018-1 [not applicable] and 2 [paraphrased above] are provided detailing the limitations experienced. Amplifying sketches or drawings are also provided. Alternative components were not substituted for examination due to the mandatory selection requirements of the Code, or because the examination coverage attained was representative of what could be expected for that type of configurations."

Licensee's Proposed Alternative Examination: No alternative to the Code requirement was proposed. The Code-required surface examination was performed to the extent practical.

Evaluation: The Code requires a 100% surface examination of the subject integral attachment welds. However, access to the welds is limited by support configuration, which is shown in the licensee's sketch to be partially contained in a floor penetration. This access limitation makes the 100% surface examination impractical to perform. To meet the Code requirements, design modifications would be required to provide access to the welds. This would create a considerable burden on the licensee.

Fifty percent of the required surface examination was completed on the subject attachment welds. In addition, there are other integrally welded attachments to Class 1 piping that are receiving the complete Code-required surface examination. Therefore, reasonable assurance that generic degradation would be detected has been provided.

Considering the impracticality of completing the Code-required surface examination, and the surface examinations that have been performed on these and other similar welds, it is recommended that relief be granted pursuant to 10 CFR 50.55a(g)(6)(i).

D. Request for Relief No. SR-018 -- Part 4 (Unit 1), Examination Category C-A, Item C1.10, Letdown and Excess Letdown Heat Exchanger (HX) Circumferential Shell Welds

Code Requirement: Table IWC-2500-1, Examination Category C-A, Item C1.10, requires a 100% volumetric examination of circumferential welds in Class 2 pressure vessels as defined by Figure IWC-2500-1. Examinations are limited to those at gross structural discontinuities as defined by NB-3213.2

Licensee's Code Relief Request: The licensee has requested relief from performing the 100% volumetric examination of circumferential shell Weld 1-02 on Letdown HX 1-CH-E-2 and Weld 1-02 on Excess Letdown HX 1-CH-E-4 as summarized below.

Ultrasonic Examination Coverage

Weld #/ [Component]	Axial Coverage	Circumferential Coverage	Reason for Partial Examination
1-02 [1-CH-E-2]	80%*	85%	Adjacent welded support and inlet/outlet nozzle configuration
1-02 [1-CH-E-4]	80%*	87%	Inlet/outlet nozzle and flange configuration

* -- Extended V-path used to maximize coverage

Licensee's Stated Basis for Requesting Relief:

"The 1980 Edition, Winter 1980 Addenda (inclusive) of ASME Section XI in Table IWB-2500-1 and IWC-2500-1 does not allow any limitations to the required volumetric [and surface] examinations. Code Case N-460, Alternative Examination Coverage for Class 1 and Class 2 Welds, allows a reduction in coverage, if it is less than 10%.

"The components listed above has been examined to the extent practical as required by the Code. Due to interferences of other components or weld joint geometry the reduction in coverage for the listed components was greater than 10%. Table SR-018-1 [not applicable] and 2 [paraphrased above] are provided detailing the limitations experienced. Amplifying sketches or drawings are also provided. Alternative components were not substituted for examination due to the mandatory selection requirements of the Code, or because the examination coverage attained was representative of what could be expected for that type of configurations."

Licensee's Proposed Alternative Examination: No alternative to the Code requirements was proposed. The Code-required volumetric examination was performed to the extent practical.

Evaluation: The Code requires a 100% volumetric examination of the subject circumferential shell welds. However, access to the welds is restricted by component configuration and adjacent obstructions that limit the volumetric examination and make the Code requirement impractical. Completing the examinations would require design modifications to improve access to the examination area. Imposition of this requirement would cause a considerable burden on the licensee.

The licensee has completed a significant portion of the Code-required examination and any pattern of degradation should have been detected by the limited examination. Therefore, reasonable assurance of the components' operational readiness has been provided.

Considering the impracticality of performing the 100% volumetric examination and that a significant portion of the welds are being examined, it is recommended that relief be granted pursuant to 10 CFR 50.55a(g)(6)(i).

E. Request for Relief No. SR-018 -- Part 5 (Unit 1), Examination Category C-A, Item C1.20, Circumferential Head Welds on Class 2 Vessels

Code Requirement: Table IWC-2500-1, Examination Category C-A, Item C1.20, requires a 100% volumetric examination of circumferential head-to-shell welds in Class 2 pressure vessels as defined by Figure IWC-2500-1.

Licensee's Code Relief Request: The licensee requested relief from performing the 100% volumetric examination of circumferential head-to-shell Weld 1-01 on Seal Injection Filters 1-CH-FL-4A and 1-CH-FL-4B, Weld 1-01 on Letdown Heat Exchanger (HX) 1-CH-E-2, and Welds 1-A01 and 1-B01 on residual heat Removal Heat Exchangers (RHRHX) 1-RH-E-1A and 1-RH-E-1B. The examination coverage achieved for each weld is summarized below.

Ultrasonic Examination Coverage

Weld # [Component]	Axial Coverage	Circumferential Coverage	Reason for Partial Examination
1-01 [1-CH-FL-4A/B]	2-62%* 5-56%*	62%**	Welded support and inlet nozzle
1-01 [1-CH-E-2]	2-45%* 5-45%*	100%**	Welded support interference
1-A01 [1-RH-E-1A]	2-79%* 5-73%*	66%**	Welded support interference and inlet/outlet configuration
1-B01 [1-RH-E-1B]	2-79%* 5-73%*	66%**	Welded support interference and inlet/outlet configuration

* -- Extended V-path used to maximize coverage
** -- Coverage in both directions
2 -- Axial scan, upwards
5 -- Axial scan, downwards

Licensee's Stated Basis for Requesting Relief:

"The 1980 Edition, Winter 1980 Addenda (inclusive) of ASME Section XI in Table IWB-2500-1 and IWC-2500-1 does not allow any limitations to the required volumetric [and surface] examinations. Code Case N-460, Alternative Examination Coverage for Class 1 and Class 2 Welds, allows a reduction in coverage, if it is less than 10%.

"The components listed above has been examined to the extent practical as required by the Code. Due to interferences of other components or weld joint geometry the reduction in coverage for the listed components was greater than 10%. Table SR-018-1 [not applicable] and 2 [paraphrased above] are provided detailing the limitations experienced. Amplifying sketches or drawings are also provided. Alternative components were not substituted for examination due to the mandatory selection requirements of the Code, or because the examination coverage attained was representative of what could be expected for that type of configurations."

Licensee's Proposed Alternative Examination: No alternative to the Code requirements was proposed. The Code-required volumetric examination was performed to the extent practical.

Evaluation: The Code requires a 100% volumetric examination of the subject circumferential head-to-shell welds. However, access to the welds is restricted by component configuration and/or adjacent obstructions that limit the volumetric examination and make the Code requirement impractical. To meet the Code requirement, the subject components would require design modifications to improve access to the examination area. Imposition of this requirement would cause a considerable burden on the licensee.

The licensee has completed a significant portion of the Code-required examination and any pattern of degradation should have been detected by the limited examination. Therefore, reasonable assurance of the components' operational readiness has been provided.

Considering the impracticality of performing the 100% volumetric examination and that a significant portion of the welds is being examined, it is recommended that relief be granted pursuant to 10 CFR 50.55a(g)(6)(i).

F. Request for Relief No. SR-018 -- Part 6 (Unit 1), Examination Category C-C Item C3.10, Integrally Welded Attachments to Class 2 Pressure Vessels

Code Requirement: Table IWC-2500-1, Examination Category C-C, Item C3.10, requires a 100% surface examination, as defined by Figure IWC-2500-5, for integrally welded attachments to Class 2 pressure vessels. For multiple vessels of similar design and service, the required examinations may be conducted on only one vessel. Where multiple vessels are provided with a number of similar attachments, the examination of the attachments may be distributed among vessels.

Licensee's Code Relief Request: The licensee has requested relief from performing the surface examination to the extent required by the Code for integral attachment Weld H001-1 on Residual Heat Removal Heat Exchanger (RHRHX) 1-RH-E-1B. The examination coverage achieved is summarized below.

Weld #	Surface Coverage	Reason for Partial Exam	Drawing #
H001-1	64%	Lower underneath plate weld inaccessible due to clearance between vessel and concrete	11448-WMKS-RH-E-1B

Licensee's Stated Basis for Requesting Relief:

"The 1980 Edition, Winter 1980 Addenda (inclusive) of ASME Section XI in Table IWB-2500-1 and IWC-2500-1 does not allow any limitations to the required volumetric and surface examinations. Code Case N-460, Alternative Examination Coverage for Class 1 and Class 2 Welds, allows a reduction in coverage, if it is less than 10%.

"The component listed above has been examined to the extent practical as required by the Code. Due to interferences of other components or weld joint geometry the reduction in coverage for the listed component was greater than 10%. Table SR-018-1 [not applicable] and 2 [paraphrased above] are provided detailing the limitations experienced. Amplifying sketches or drawings are also provided. Alternative components were not substituted for examination due to the mandatory selection requirements of the Code, or because the examination coverage attained was representative of what could be expected for that type of configurations."

Licensee's Proposed Alternative Examination: No alternative to the Code requirements was proposed. The Code-required surface examination was performed to the extent practical.

Evaluation: The Code requires a 100% surface examination of the subject integral attachment weld. However, 100% examination coverage is impractical for this weld because of limited clearance between the lower plate and the concrete beneath it. In order to perform a 100% surface examination, design modifications of the RHRHX and the lower support

would be required to allow access for examination. Imposition of this requirement would cause a considerable burden on the licensee.

Severe degradation of the subject support would most likely affect all portions of the integral attachment weld. Since the licensee has completed a significant portion (64%) of the required surface examination, any pattern of degradation of the weld should have been detected. Therefore, adequate assurance of the operational readiness of the support has been provided.

Considering the impracticality of performing a 100% surface examination on the subject attachment weld, and that severe degradation should be detected by the limited examination, it is recommended that relief be granted pursuant to 10 CFR 50.55a(g)(6)(i).

G. Request for Relief No. SR-019 (Unit 1), Examination Category B-J, Item B9.11, Reactor Coolant System Circumferential Butt Welds

Code Requirement: Table IWB-2500-1, Examination Category B-J, Item B9.11, requires 100% surface and volumetric examinations, as defined by Figure IWB-2500-8, for circumferential welds 4 inch nominal pipe size (NPS) or greater that are selected for examination.

Licensee's Code Relief Request: The licensee has requested relief from performing the 100% volumetric examination of the following circumferential welds in the reactor coolant system. The examination coverage achieved is listed below.

Examination Coverage Estimates

Weld #/ (Drawing #)	UT Scan Coverage 2	5	7&8	Reason for partial coverage
1-12 (11448-WMKS-0100AZ-1)	100%	*	100%	ID tag and pump nozzle configuration**
1-14 (11448-WMKS-0100AZ-1)	99%	*	100%	Valve-to-pipe configuration**
1-12 (11448-WMKS-0102AZ-1)	99%	*	100%	1 1/2" nozzle-to-pump configuration**
1-04 (11448-WMKS-0100AZ-1)	100%	*	100%	Valve-to-elbow configuration**
1-04 (11448-WMKS-0102AZ-1)	100%	*	100%	Valve-to-elbow configuration
1-11 (11448-WMKS-0100AZ-1)	*	50%	50%	Pump and elbow joint configuration**
1-11 (11448-WMKS-0102AZ-1)	*	50%	50%	Pumps and elbow joint configuration**
1-05 (11448-WMKS-0127J2)	75%	75%@	75%	Weld crown and valve-to-tee configuration

* - Scan was performed from this direction, coverage is unknown due to valve/pump configuration limitation. Note: Loop valves, pumps, and elbows made of cast austenitic material.
**- V-path could not be extended due to cast austenitic material
@ - Extended V-path used to cover this scan direction.
2 - Axial scan, 180° from isometric flow direction.
5 - Axial scan, the same direction as isometric flow direction.
7 - Circumferential scan, clockwise.
8 - Circumferential scan, counterclockwise.

Licensee's Stated Basis for Requesting Relief:

"The 1980 Edition, Winter 1980 Addenda (inclusive) of ASME Section XI in Table IWB-2500-1 does not allow any limitations to the required volumetric examinations. Code Case N-460, Alternative Examination Coverage for Class 1 and Class 2 Welds, allows a reduction in coverage, if less than 10%.

"The components listed above have been examined to the extent practical as required by the Code. Due to interferences of other components or weld joint geometry the reduction in coverage for the listed components was greater than 10%. Prior to 1988 the Surry Unit 1 ISI Program contained generic relief requests concerning partial examination coverage. These relief request[s] SR-010 (Class 1 Category B-J) and SR-013 (Class 2 Category C-F) were withdrawn by letter serial # 88-332A dated September 30, 1988. They were withdrawn as a result of correspondence received May 23, 1988 from the NRC, which indicated that generic relief requests could not be approved, and that specific information concerning weld/component identification, description of obstruction or limitation, and estimate of Code coverage attained needed to be provided.

"The examinations of the components above occurred in 1986 or earlier, when our procedures did not record specific scan coverage percentages. The examination record indicated what caused the limitation, but not the degree of limitation in all directions. Table SR-019-1 [paraphrased above] is provided estimating the coverage experienced. The estimate is based upon values from later examinations of similar type components and geometric arrangements, and/or any information recorded for the specific examination. Alternative components were not substituted for examination since the coverage attained was representative of what could be expected for these weld joint configurations."

Licensee's Proposed Alternative Examination: No alternative to the Code requirements was proposed. The Code-required volumetric examination was performed to the extent practical.

Evaluation: The Code requires 100% surface and volumetric examinations of at least 25% of Class 1 circumferential welds greater than or equal to 4 inch NPS. As reported by the licensee, the volumetric examinations were limited in at least one of the required scan directions by physical obstructions, or component configurations. These limitations make 100% volumetric examination impractical to perform on the subject welds. To complete the volumetric examination to the extent required by the Code, design modifications to the weld joints would be needed to gain access to

100% of the examination area. Imposition of this requirement would cause a considerable burden on the licensee.

The licensee has completed a significant portion (>50%) of the Code-required volumetric examinations and 100% of the Code-required surface examinations. In addition, these welds are a small part of a much larger population of welds that is receiving complete volumetric examination. Therefore, generic degradation should have been detected and reasonable assurance of the operational readiness of the subject piping system has been provided.

Considering the impracticality of performing the 100% volumetric examination and the extent of examinations that are being performed on these and similar welds, it is recommended that relief be granted pursuant to 10 CFR 50.55a(g)(6)(i).

H. Request for Relief No. SR-020 -- Part 1 (Unit 2), Examination Category B-J, Item B9.11, Reactor Coolant System Circumferential Butt Welds

Code Requirement: Table IWB-2500-1, Examination Category B-J, Item B9.11, requires 100% surface and volumetric examinations, as defined by Figure IWB-2500-8, for circumferential welds 4 inch nominal pipe size (NPS) or greater that are selected for examination.

Licensee's Code Relief Request: The licensee has requested relief from performing the 100% volumetric examination of the following circumferential welds in the reactor coolant system; the examination coverage achieved is also shown.

Examination Coverage Estimates

Weld #/ (Drawing #)	UT Scan Coverage 2	5	7&8	Reason for Partial Exam
1-05 (11548-WMKS-RC-6)	89%	89%@	100%	Valve and pipe joint configuration
1-07 (11548-WMKS-0122H1)	83%@	83%	100%	Valve and elbow configuration
1-12 (11548-WMKS-RC-12-1)	100%	0%	100%	Pump and pump joint configuration**
1-13 (11548-WMKS-RC-12-1)	0%	100%	100%	Valve and pipe joint configuration**
1-14 (11548-WMKS-RC-12-1)	100%	0%	100%	Valve and pipe joint configuration**

@ - Extended V-path used to cover this scan direction.
**- V-path could not be extended due to cast austenitic material
2 - Axial scan, 180° from isometric flow direction.
5 - Axial scan, the same direction as isometric flow direction.
7 - Circumferential scan, clockwise.
8 - Circumferential scan, counterclockwise.

Licensee's Stated Basis for Requesting Relief:

"The 1980 Edition, Winter 1980 Addenda (inclusive) of ASME Section XI in Table IWB-2500-1 does not allow any limitations to the required volumetric examinations. Code Case N-460, Alternative Examination Coverage for Class 1 and Class 2 Welds, allows a reduction in coverage, if less than 10%.

"The components listed above have been examined to the extent practical as required by the Code. Due to interferences of other components or weld joint geometry, the reduction in coverage for the listed components was greater than 10%. Table SR-020-1 [paraphrased above] is provided detailing the limitations experienced. Amplifying sketches or drawings are also provided. Alternative components were not substituted for examination due to the mandatory selection requirements of the Code, or because the examination coverage attained was representative of what could be expected for that type of configurations."

Licensee's Proposed Alternative Examination: No alternative to the Code requirements was proposed. The Code-required volumetric examination was performed to the extent practical.

Evaluation: The Code requires 100% surface and volumetric examinations of at least 25% of Class 1 circumferential welds greater than or equal to 4 inch NPS. As reported by the licensee, the required examinations were limited in at least one of the required scan directions by physical obstructions or component configurations. These limitations decrease coverage and make the Code-required volumetric examination impractical to complete for these welds. In order to complete the volumetric examination to the extent required by the Code, design modifications to the weld joints would be needed to allow access to an acceptable portion (>90%) of the examination volume. Imposition of this requirement would cause a considerable burden on the licensee.

The licensee has completed a significant portion (>50%) of the Code-required volumetric examinations and 100% of the Code-required surface examinations for the subject welds. In addition, these welds are a small part of a much larger population of welds that is receiving a 100% volumetric examination. Therefore, generic degradation should have been detected by the examinations performed and reasonable assurance of the operational readiness of the subject piping system has been provided.

Considering the impracticality of meeting the Code requirements, and the extent of examinations that are being performed on these and similar welds, it is recommended that relief be granted pursuant to 10 CFR 50.55a(g)(6)(i).

I. Request for Relief No. SR-020 -- Part 2 (Unit 2), Examination Category C-A, Item C1.20, Letdown Heat Exchanger (HX) Circumferential Head Weld

Code Requirement: Table IWC-2500-1, Examination Category C-A, Item C1.20, requires a 100% volumetric examination of circumferential head-to-shell welds in Class 2 pressure vessels as defined by Figure IWC-2500-1.

Licensee's Code Relief Request: The licensee requested relief from performing the 100% volumetric examination of the following circumferential head-to-shell weld in Letdown HX 2-CH-E-2 (Drawing # 11548-WMKS-CH-E-2). The examination coverage achieved is also shown.

Examination Coverage Estimate

Weld #/[Comp #]	UT Scan Coverage 2	5	7&8	Reason for Partial Exam
1-01/[2-CH-E-2]	66%	66%	38%	Weld support, extended V-path used to maximize coverage

2 - Axial scan, 180° from isometric flow direction.
5 - Axial scan, the same direction as isometric flow direction.
7 - Circumferential scan, clockwise.
8 - Circumferential scan, counterclockwise.

Licensee's Stated Basis for Requesting Relief:

"The 1980 Edition, Winter 1980 Addenda (inclusive) of ASME Section XI in Table IWB-2500-1 does not allow any limitations to the required volumetric examinations. Code Case N-460, Alternative Examination Coverage for Class 1 and Class 2 Welds, allows a reduction in coverage, if less than 10%.

"The component listed above have been examined to the extent practical as required by the Code. Due to interferences of other components or weld joint geometry, the reduction in coverage for the listed component was greater than 10%. Table SR-020-1 [paraphrased above] is provided detailing the limitations experienced. Amplifying sketches or drawings are also provided. Alternative components were not substituted for examination due to the mandatory selection requirements of the Code, or

because the examination coverage attained was representative of what could be expected for that type of configurations."

Licensee's Proposed Alternative Examination: No alternative to the Code requirements has been proposed. The Code-required volumetric examination was performed to the extent practical.

Evaluation: The Code requires a 100% volumetric examination of the subject circumferential head-to-shell weld. However, access to the weld is restricted by an adjacent weld support that limits the volumetric examination and makes the Code requirement impractical. To complete the examination, the letdown HX would require design modifications to improve access to the examination area. Imposition of this requirement would cause a considerable burden on the licensee.

The licensee has completed a significant portion of the Code-required examination and any pattern of degradation should have been detected by the limited examination. Therefore, reasonable assurance of the component's operational readiness has been provided.

Considering the impracticality of performing the 100% volumetric examination and that a significant portion of the weld is being examined, it is recommended that relief be granted pursuant to 10 CFR 50.55a(g)(6)(i).

J. Request for Relief No. SR-020 -- Part 3 (Unit 2), Examination Category C-A, Item C1.10, Letdown Heat Exchanger (HX) and Excess Letdown HX Circumferential Welds

Code Requirement: Table IWC-2500-1, Examination Category C-A, Item C1.10, requires 100% volumetric examination of circumferential shell welds in Class 2 pressure vessels as defined by Figure IWC-2500-1. Examinations are limited to those at gross structural discontinuities as defined by NB-3213.2

Licensee's Code Relief Request: The licensee has requested relief from performing the 100% volumetric examination of the following circumferential shell welds in Letdown HX 2-CH-E-2 (Drawing # 11548-WMKS-CH-E-2) and Excess Letdown HX 2-CH-E-4 (Drawing # 11548-WMKS-CH-E-4). The extent of examinations completed is shown below.

Examination Coverage Estimate

Weld #/ [Component #]	UT Scan Coverage 2	5	7&8	Reason for Partial Exam
1-02/[2-CH-E-2]	95%	95%	77%	Flange/weld configuration, welded support, nozzles
1-02/[2-CH-E-4]	77%	77%	80%	Nozzles, extended V-path used to maximize coverage

2 - Axial scan, 180° from isometric flow direction.
5 - Axial scan, the same direction as isometric flow direction.
7 - Circumferential scan, clockwise.
8 - Circumferential scan, counterclockwise.

Licensee's Stated Basis for Requesting Relief:

"The 1980 Edition, Winter 1980 Addenda (inclusive) of ASME Section XI in Table IWB-2500-1 does not allow any limitations to the required volumetric examinations. Code Case N-460, Alternative Examination Coverage for Class 1 and Class 2 Welds, allows a reduction in coverage, if less than 10%.

"The components listed above have been examined to the extent practical as required by the Code. Due to interferences of other components or weld joint geometry the reduction in coverage for the listed component was greater than 10%. Table SR-020-1 [paraphrased above] is provided detailing the limitations experienced. Amplifying sketches or drawings are also provided. Alternative components were not substituted for examination due to the mandatory selection requirements of the Code, or because the examination coverage attained was representative of what could be expected for that type of configurations."

Licensee's Proposed Alternative Examination: No alternative to the Code requirements was proposed. The Code-required volumetric examination was performed to the extent practical.

Evaluation: The Code requires 100% volumetric examination of the subject circumferential head-to-shell welds. However, access to the welds is restricted by component configurations and/or adjacent obstructions that limit the volumetric examinations and make the Code requirements impractical to meet. To complete the examinations, the subject components would require design modifications to improve access to the examination area. Imposition of this requirement would cause a considerable burden on the licensee.

The licensee has completed a significant portion of the Code-required examinations and any pattern of degradation should have been detected by the limited examinations. Therefore, reasonable assurance of the components' operational readiness has been provided.

Considering the impracticality of performing the 100% volumetric examination and that a significant portion of the welds was examined, it is recommended that relief be granted pursuant to 10 CFR 50.55a(g)(6)(i).

K. Request for Relief No. SR-020 -- Part 4 (Unit 2), Examination Category C-C Item C3.40, Integrally Welded Attachments to Class 2 Piping

Code Requirement: Table IWC-2500-1, Examination Category C-C, Item C3.40, requires 100% surface examination, as defined by Figure IWC-2500-5, for integrally welded attachments to Class 2 piping. Examination is limited to attachments of those components required to be examined under Examination Categories C-F and C-G.

Licensee's Code Relief Request: The licensee has requested relief from performing the surface examination to the extent required by the Code for the following integral attachment welds to main steam system piping; the examination coverage attained is also listed.

Weld #(Loop)	Surface Coverage	Reason for Partial Exam	Drawing #
H001-1 (Loop B)	80%	Support configuration	11548-WMKS-0101D1
H001-2 (Loop B)	80%	Support configuration	11548-WMKS-0101D1
H004-1 (Loop C)	57%	Support configuration	11548-WMKS-102D1
H004-2 (Loop C)	57%	Support configuration	11548-WMKS-102D1

Licensee's Stated Basis for Requesting Relief:

"The 1980 Edition, Winter 1980 Addenda (inclusive) of ASME Section XI in Table IWB-2500-1 does not allow any limitations to the required volumetric examinations. Code Case N-460, Alternative Examination Coverage for Class 1 and Class 2 Welds, allows a reduction in coverage, if less than 10%.

"The components listed above have been examined to the extent practical as required by the Code. Due to interferences of other components or weld joint geometry the reduction in coverage for the listed component was greater than 10%. Table SR-020-1 [paraphrased above] is provided detailing the limitations experienced. Amplifying sketches or drawings are also provided. Alternative components were not substituted for examination due to the mandatory selection requirements of the Code, or because the examination coverage attained was representative of what could be expected for that type of configurations."

Licensee's Proposed Alternative Examination: No alternative to the Code requirements was proposed. The Code-required surface examination was performed to the extent practical.

Evaluation: The Code requires 100% surface examination of integral attachment welds to Class 2 piping. However, the complete surface examination was impractical to perform for the subject welds because of support configuration. In order to perform a 100% surface examination, design modifications of the subject main steam supports would be required

to allow access for examination. Imposition of this requirement would cause a considerable burden on the licensee.

Severe degradation that may occur to the subject supports would most likely affect all portions of the integral attachment weld. Since the licensee has completed significant portions (57% and 80%) of the required surface examinations, any pattern of degradation of the welds should have been detected. Therefore, adequate assurance of the operational readiness of the support has been provided.

Considering the impracticality of performing 100% surface examinations on the subject attachment welds, and that severe degradation should have been detected by the limited examinations, it is recommended that relief be granted pursuant to 10 CFR 50.55a(g)(6)(i).

3.0 CONCLUSION

The INEL staff has reviewed the licensee's submittal and concludes that, pursuant to 10 CFR 50.55a(g)(6)(i), the requirements of the Code are impractical and recommends that relief be granted for all parts of Requests for Relief SR-018 (Unit 1), SR-019, (Unit 1), and SR-020 (Unit 2).