March 21, 2001

Mr. Ted C. Feigenbaum
Executive Vice President and
Chief Nuclear Officer
North Atlantic Energy Service Corporation
c/o Mr. James M. Peschel
P.O. Box 300
Seabrook, NH 03874

SUBJECT: SECOND 10-YEAR INTERVAL INSERVICE INSPECTION PROGRAM PLAN REQUESTS FOR RELIEF NOS. 2IR-1, 2IR-2, 2IR-4, 2IR-6, 2IR-10, 2IR-11, AND 2IR-12 FOR SEABROOK STATION, UNIT NO. 1 (TAC NO. MA9902)

Dear Mr. Feigenbaum:

The U.S. Nuclear Regulatory Commission (NRC) staff has reviewed and evaluated the information provided by North Atlantic Energy Service Corporation (licensee) in its letter dated August 31, 2000, proposing its Second 10-Year Interval Inservice Inspection Program Plan Requests for Relief 2IR-1, 2IR-2, 2IR-4, 2IR-6, 2IR-10, 2IR-11, and 2IR-12 for Seabrook Station, Unit No. 1. The licensee provided additional information in its letter dated October 26, 2000. The staff found the licensee's requests for relief acceptable. Therefore, relief is granted pursuant to 10 CFR 50.55a(g)(6)(i) for requests for relief 2IR-1, 2IR-2, 2IR-4, 2IR-10, 2IR-11, and 2IR-12. For request for relief 2IR-6 the licensee's proposed alternative provides an acceptable level of quality and safety. Therefore, the licensee's proposed alternative is authorized for 2IR-6, pursuant to 10 CFR 50.55a(a)(3)(i) for the second 10-year inservice inspection interval.

The staff's evaluation and conclusions are contained in the staff's safety evaluation provided in Enclosure 1. Enclosure 2 lists each portion of the relief request and the status of approval. If you have any questions, please contact Victor Nerses at (301) 415-1484. This task completes the staff's efforts on TAC No. MA9902.

Sincerely,

/RA//

James W. Clifford, Chief, Section 2
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-443

Enclosures: 1. Safety Evaluation
2. Summary of Relief Requests

cc w/encls: See next page

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Chief Nuclear Officer
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c/o Mr. James M. Peschel
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DISTRIBUTION:

PUBLIC	EAdensam (EGA1)	ACRS	TClark	JClifford	RPulsifer
PDI-2 Rdg.	JLinville, RGN-I	GHill(2)	OGC	VNerses	JShea, EDO

** See previous concurrence.
ACCESSION NO. ML010540162 *SE Input provided on 01/09/01. No major changes made.

OFFICE	PDI-2/PM	PDI-2/PM	PDI-2/LA	EMCB:DE	OGC	PDI-2/SC
NAME	RPulsifer	VNerses	TLClark	EJSullivan*	JEuchner**	JClifford
DATE	2/26/01	3/5/01	2/23/01	1/09/01	2/7/01	3/19/01

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Seabrook Station, Unit No. 1
cc:

Lillian M. Cuoco, Esq.
Senior Nuclear Counsel
Northeast Utilities Service Company
P.O. Box 270
Hartford, CT 06141-0270

Mr. Peter Brann
Assistant Attorney General
State House, Station #6
Augusta, ME 04333

Resident Inspector
U.S. Nuclear Regulatory Commission
Seabrook Nuclear Power Station
P.O. Box 1149
Seabrook, NH 03874

Town of Exeter
10 Front Street
Exeter, NH 03823

Regional Administrator, Region I
U.S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406

Office of the Attorney General
One Ashburton Place
20th Floor
Boston, MA 02108

Board of Selectmen
Town of Amesbury
Town Hall
Amesbury, MA 01913

Mr. Dan McElhinney
Federal Emergency Management Agency
Region I
J.W. McCormack P.O. &
Courthouse Building, Room 401
Boston, MA 02109

Mr. Stephen McGrail, Director
ATTN: James Muckerheide
Massachusetts Emergency Management
Agency
400 Worcester Road
Framingham, MA 01702-5399

Philip T. McLaughlin, Attorney General
Steven M. Houran, Deputy Attorney
General
33 Capitol Street
Concord, NH 03301

Mr. Woodbury Fogg, Director
New Hampshire Office of Emergency
Management
State Office Park South
107 Pleasant Street
Concord, NH 03301

Mr. Roy E. Hickok
Nuclear Training Manager
Seabrook Station
North Atlantic Energy Service Corp.
P.O. Box 300
Seabrook, NH 03874

Mr. James M. Peschel
Manager - Regulatory Programs
Seabrook Station
North Atlantic Energy Service Corp.
P.O. Box 300
Seabrook, NH 03874

Mr. W. A. DiProfio
Station Director
Seabrook Station
North Atlantic Energy Service Corporation
P.O. Box 300
Seabrook, NH 03874

Mr. Frank W. Getman, Jr.
President and Chief Executive Officer
BayCorp Holdings, LTD
20 International Drive, Suite 301
Portsmouth, NH 03801-6809

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

FOR SECOND 10-YEAR INTERVAL INSERVICE INSPECTION PROGRAM

REQUESTS FOR RELIEF 2IR-1, 2IR-2, 2IR-4, 2IR-6, 2IR-10, 2IR-11, AND 2IR-12

FOR SEABROOK STATION, UNIT NO. 1

NORTH ATLANTIC ENERGY SERVICE CORPORATION

DOCKET NUMBER 50-443

1.0 INTRODUCTION

Inservice inspection (ISI) of the American Society of Mechanical Engineers (ASME) Code Class 1, 2, and 3 components is to be performed in accordance with Section XI of the ASME Boiler and Pressure Vessel (B&PV) Code and applicable addenda as required by 10 CFR 50.55a(g), except where specific written relief has been granted by the U.S. Nuclear Regulatory Commission (NRC) pursuant to 10 CFR 50.55a(g)(6)(i). Title 10 of the *Code of Federal Regulations* Section 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 difficulty 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 pre-service examination requirements, set forth in the ASME Code, Section XI, "Rules for Inservice Inspection (ISI) 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 10-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) 12 months prior to the start of the 120-month interval, subject to the limitations and modifications listed therein. In its Safety Evaluation dated August 30, 2000, the NRC approved the use of the 1995 Edition through 1996 Addenda of the ASME Boiler and Pressure Vessel Code for the Seabrook Nuclear Power Station second 10-year ISI interval.

2.0 EVALUATION

The NRC staff has reviewed the information concerning ISI program relief requests 2IR-1, 2IR-2, 2IR-4, 2IR-6, 2IR-10, 2IR-11, and 2IR-12 for the second 10-year interval for Seabrook Nuclear Power Station, Unit No. 1, provided in a North Atlantic Energy Service Corporation's (the licensee's) letter dated August 31, 2000. For ease of evaluation the staff has divided relief request 2IR-1 into parts A and B, relief request 2IR-2 into parts A, B, C, and D, and relief request 2IR-4 into parts A and B. The licensee also provided additional information in its letter dated October 26, 2000.

The information provided by the licensee in support of the requests for relief from Code requirements has been evaluated and the basis for disposition is documented below.

2.1 Request for Relief No. 2IR-1, Revision 0 (Part A)[1] Examination Category B-A , Items B1.21, and B1.40, Reactor Vessel Circumferential Head, and Head-to-Flange Welds

Code Requirement: ASME Section XI, 1995 Edition through the 1996 Addenda, Table IWB-2500-1, Category B-A, Pressure Retaining Welds in Reactor Vessel Items B1.21 and B1.40 require examination of 100% of the weld. In addition, for Category B-A, Item B1.40, the Code requires a 100% surface examination of the Weld-to-Flange Weld.

Licensee's Code Relief Request: Pursuant to 10 CFR 50.55a(g)(5)(iii) the licensee has determined that, due to design and geometric configuration, it is impractical to meet the Code required 100% coverage of Section XI or the alternative examination coverage requirements of Code Case N-460 for the welds identified in Table 1 below:

Table 1

Weld Identification	Code Item/Number	Limitation	CRV Coverage
RC RPV 103-101	B 1.21	One-sided exam due to CRD Shield. Obstruction due to lifting lugs.	50%
RC RPV 101-101	B 1.40	One-sided exam due to CRD Shield. Obstruction due to lifting lugs	50%

Licensee's Basis for Requesting Relief (as stated):

RPV Pressure Retaining Welds

As required by ASME Section XI, Table IWB-2500-1, Category B-A, these welds receive a volumetric examination. Weld RC RPV 103-101 has limited coverage

[1]For ease of evaluation the staff has divided Request for Relief 2IR-1 into Parts A and B.

due to design (physical obstruction). The limitation is due to interference of the control rod drive (CRD) shield that limits examination to one side of the weld and the reactor vessel head lifting lugs, which cover the weld. Weld RC RPV (sic) 101-101 has limited coverage due to the close proximity of the weld to the reactor vessel head flange. The weld is sufficiently close such that only a one sided ultrasonic examination is possible. The surface examination of this weld is fully achievable.

In addition to the limited volumetric examination, the welds identified in Table 1[2] are subject to VT-2 visual examination conducted during the system leakage test each refueling outage as specified in Table IWB-2500-1, Examination Category B-P of the 1995 Edition through the 1996 Addenda of ASME Section XI.

North Atlantic believes that the volumetric examination coverage achieved, previous acceptable results of VT-2 visual examinations and examinations performed on welds with similar design, there is reasonable assurance of continued structural integrity of these welds, and an acceptable level of quality and safety is maintained.

Licensee's Proposed Alternative Examination (as stated):

There are no alternate examinations proposed. Volumetric examination of the subject welds will be completed to the maximum extent practical.

Evaluation:

The Code requires 100% volumetric examination of the subject Reactor Vessel Circumferential Head, and Head-to-Flange Welds. Weld RC RPV 103-101 limited coverage is due to interference of the control rod drive (CRD) shield that limits examination to one side of the weld and the reactor vessel head lifting lugs cover the subject weld. Weld RC RPV 101-101 has limited coverage due to the close proximity of the weld to the reactor vessel head flange. The weld is so close such that only a one-sided ultrasonic examination is possible. For weld RC RPV 101-101 the licensee completed the Code-required 100% surface examination.

These limitations make the 100% volumetric examination impractical. To gain access for examination, the subject Reactor Vessel Circumferential Head, and Head-to-Flange Welds would require design modifications. Imposition of the Code requirement would create an undue burden on the licensee.

The licensee has examined a significant portion of these welds, obtaining 50% weld coverage for each of the Reactor Vessel Circumferential Head, and Head-to-Flange Welds. In addition, the licensee obtained 100% coverage for the Code-required surface exam on weld RC RPV 101-101. The welds are subject to a Code-required VT-2 visual examination conducted during the system leakage test each refueling outage.

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[2]The licensee's Table 1 is not included in this safety evaluation.

Based on the examinations that have been performed, the Code-required VT-2 visual examination conducted during the system leakage test each refueling outage, and examinations performed on similar welds, the staff finds that reasonable assurance of structural integrity of the subject components has been provided. Therefore, relief is granted pursuant to 10 CFR 50.55a(g)(6)(i).

2.2 Request for Relief No. 2IR-1, Revision 0 (Part B) Examination Category B-D, Item B3.90, Reactor Vessel Nozzle-to-Vessel Weld

Code Requirement: ASME Section XI, 1995 Edition through the 1996 Addenda, Table IWB-2500-1, Category B-D, Item No. B3.90 Full Penetration Welded Nozzles in Vessels, require examination of 100% of the weld.

Licensee's Code Relief Request: Pursuant to 10 CFR 50.55a(g)(5)(iii) the licensee has determined that, due to design and geometric configuration, it is impractical to meet the Code required 100% coverage of Section XI or the alternative examination coverage requirements of Code Case N-460 for the welds identified in Table 2 below:

Table 2

Weld Identification	Code Item/Number	Limitation	CRV Coverage
RC RPV 107-121-A	B3.90	Geometric configuration of the nozzle knuckle region	69%
RC RPV 107-121-D	B3.90	Geometric configuration of the nozzle knuckle region	69%
RC RPV 107-121-E	B3.90	Geometric configuration of the nozzle knuckle region	69%
RC RPV 107-121-H	B3.90	Geometric configuration of the nozzle knuckle region	69%

Licensee's Basis for Requesting Relief (as stated):

Nozzle Welds

As required by ASME Section XI, Table IWB-2500-1, Category B-D, these welds receive a volumetric examination. The four welds listed in Table 1[3] have limited coverage due to the geometric configuration of the nozzle knuckle region.

[3]The licensee's Table 1 is not included in this Safety Evaluation.

In addition to the limited volumetric examination, the welds identified in Table 1 are subject to VT-2 visual examination conducted during the system leakage test each refueling outage as specified in Table IWB-2500-1, Examination Category B-P of the 1995 Edition through the 1996 Addenda of ASME Section XI.

North Atlantic believes that the volumetric examination coverage achieved, previous acceptable results of VT-2 visual examinations and examinations performed on welds with similar design, there is reasonable assurance of continued structural integrity of these welds, and an acceptable level of quality and safety is maintained."

Licensee's Proposed Alternative Examination (as stated):

There are no alternate examinations proposed. Volumetric examination of the subject welds will be completed to the maximum extent practical.

Evaluation:

The Code requires 100% volumetric examination of the subject Reactor Vessel Nozzle-to-Vessel Welds, RC RPV 107-121-A, RC RPV 107-121-D, RC RPV 107-121-E, and RC RPV 107-121-H. The licensee's drawings 1-NHY-650007 and 1-NHY-650010 show that the subject Nozzle-to-Vessel Welds have limited coverage due to the geometric configuration of the nozzle knuckle region.

These limitations make the 100% volumetric examination impractical. To gain additional access for examination, the subject reactor vessel nozzle-to-vessel welds would require design modifications. Imposition of this requirement would create an undue burden on the licensee.

The licensee has examined a significant portion of these welds, obtaining 69% coverage for each of the subject nozzle-to-vessel welds. In addition, the welds are subject to a Code-required VT-2 visual examination conducted during the system leakage test each refueling outage.

Based on the licensee's examinations and the Code-required VT-2 visual examination conducted during the system leakage test each refueling outage, reasonable assurance of structural integrity of the subject components has been provided. Therefore, relief is granted pursuant to 10 CFR 50.55a(g)(6)(i).

2.3 Request for Relief No. 2IR-2, Revision 0 (Part A)[4] Examination Category B-B, Item B2.11 Pressurizer Circumferential Shell-to-Head Weld

Code Requirement: ASME Section XI, 1995 Edition through the 1996 Addenda, Examination Category B-B, Item B2.11 requires 100% volumetric examination, as defined by Figure IWB-2500-1 for the Pressurizer Circumferential Shell-to-Head Weld.

[4]For ease of evaluation the staff has divided Request for Relief 2IR-2 into Parts A, B, C, and D.

Licensee's Code Relief Request: Pursuant to 10 CFR 50.55a(g)(5)(iii) the licensee has determined that, due to design and geometric configuration, it is impractical to meet the Code required 100% coverage of Section XI for the weld listed in Table 3 below:

Table 3
Nozzle and Circumferential Welds

Weld Identification	Code Item/Number	Limitation	CRV Coverage
RC E-10 01	B2.11	OD Interference	80%

Licensee's Basis for Requesting Relief (as stated):

Pressurizer Bottom Head to Shell Weld - RC E-10 01

ASME Section XI, Table IWB-2500-1, Category B-B, requires this weld be examined volumetrically for essentially 100% of the weld length. Weld RC E-10 01 can not be examined for essentially 100% of the weld length due to design (physical obstruction) and geometric configuration. Located just above and below the weld are 8 nonstructural attachments (NB-4435) used during the manufacturing process. Removal of these attachments by grinding is impractical and could negatively effect the Pressurizer vessel. There are also 5 – 1" diameter instrumentation nozzles located 6" above the weld centerline, which limits coverage. In addition, the transition geometry from the lower head to shell further limits coverage. These obstructions and the geometric configuration limited the weld examination volume to 80%. This was the maximum extent achievable during the First Ten-Year Interval.

The Pressurizer bottom head to shell weld is subject to VT-2 visual examination conducted during the system leakage test each refueling outage as specified in Table IWB-2500-1, Examination Category B-P of the 1995 Edition through the 1996 Addenda of ASME Section XI.

North Atlantic believes that previous acceptable results of volumetric examination on 80% of the weld examination volume is representative of the entire weld. Removal of nonstructural attachments to gain examination coverage is impractical and could reduce the level of quality and safety of the Pressurizer vessel. In addition to the volumetric examination, the acceptable results of visual examinations and pressure tests performed each refueling outage provides reasonable assurance of continued structural integrity of this weld, and maintains an acceptable level of quality and safety.

Licensee's Proposed Alternative Examination (as stated):

There are no alternate examinations proposed. Volumetric examination of the subject welds will be completed to the maximum extent practical.

Evaluation:

The Code requires 100% volumetric examination of the subject welds. Complete examination coverage of Weld RC E-10 01 is limited due to design (physical obstruction) and geometric configuration. Located just above and below the weld are eight nonstructural attachments (NB-4435) used during manufacturing. Removal of these attachments by grinding is impractical and could negatively affect the pressurizer vessel. There are also five 1" diameter instrumentation nozzles located 6" above the weld centerline, which limits coverage. In addition, the transition geometry from the lower head to shell further limits coverage.

The Code requirement is impractical to perform and to meet the Code requirements, design modifications would be necessary to provide access for examination. Imposition of the Code requirements would result in an undue burden on the licensee.

The licensee has examined a significant portion of the subject weld, obtaining 80% coverage of the weld. Based on the licensee's examination and the Code-required VT-2 visual examination conducted during the system leakage test each refueling outage, reasonable assurance of structural integrity of the subject component has been provided. Therefore, relief is granted pursuant to 10 CFR 50.55a(g)(6)(i).

2.4 Request for Relief No. 2IR-2, Revision 0 (Part B) Examination Category B-D, Item B3.110 Pressurizer Nozzle-to-Vessel Welds

Code Requirement: ASME Section XI, 1995 Edition through the 1996 Addenda, Examination Category B-D, Item B3.110 requires 100% volumetric examination, as defined by Figure IWB-2500-7, Pressurizer Nozzle-to-Vessel Welds.

Licensee's Code Relief Request: Pursuant to 10 CFR 50.55a(g)(5)(iii) the licensee has determined that, due to design and geometric configuration, it is impractical to meet the Code required 100% coverage of Section XI for the welds listed in Table 4 below:

Table 4
Nozzle Welds

Weld Identification	Code Item/Number	Limitation	CRV Coverage
RC E-10 A-NZ	B3.110	Nozzle-to-Shell Geometry and ID Cladding	67%
RC E-10 B-NZ	B3.110	Nozzle-to-Shell Geometry and ID Cladding	55%
RC E-10 C-NZ	B3.110	Nozzle-to-Shell Geometry and ID Cladding	53%
RC E-10 D-NZ	B3.110	Nozzle-to-Shell Geometry and ID Cladding	77%

Weld Identification	Code Item/Number	Limitation	CRV Coverage
RC E-10 S-NZ	B3.110	Nozzle-to-Shell Geometry and ID Cladding	63%
RC E-10 SP-NZ	B3.110	Nozzle-to-Shell Geometry and ID Cladding	72%

Licensee's Basis for Requesting Relief (as stated):

Pressurizer Nozzle Welds – RC E-10 A-NZ, RC E-10 B-NZ, RC E-10 C-NZ, RC E-10 D-NZ, RC E-10 S-NZ, and RC E-10 SP-NZ

As required by ASME Section XI, Table IWB-2500-1, Category B-D, these welds receive a volumetric examination. Nozzle welds RC E-10 A-NZ through RC E-10 SP-NZ have limited coverage due to the nozzle to shell geometry. ISI drawing 1-NHY-650006 shows typical Pressurizer nozzle to stainless steel safe-end weld detail. The transition, from the carbon steel vessel nozzle to the stainless steel safe-end to the stainless steel pipe, is large over a short distance. This causes transducer sound beam propagation angle to change abruptly thereby not fully interrogating the required ASME examination volume. Each nozzle has its own unique fit-up, weld, and finish contour which presents specific individual limitations on examination volume. As depicted in Table 1[5], these limitations result in coverage from 53% to 77% of total examination volume.

The examination volumes achieved are the maximum extent practical. North Atlantic believes that the achievable examination volumes are representative of the entirety of each weld. ASME Code Category B-D, Item No. B3.110, requires that all Pressurizer nozzle to vessel welds be examined volumetrically. Since all of the nozzles require examination, the probability of finding a flaw is increased. North Atlantic believes that it is impractical grind these transitions or add weld material to increase examination volume. These techniques could decrease the level of quality and safety in the Pressurizer nozzle safe-end welds.

In addition to the limited volumetric examinations, the Pressurizer nozzle to vessel welds are subject to VT-2 visual examination conducted during the system leakage test each refueling outage as specified in Table IWB-2500-1, Examination Category B-P of the 1995 Edition through the 1996 Addenda of ASME Section XI.

North Atlantic believes that previous acceptable results of volumetric examinations of Pressurizer nozzle to vessel welds RC E-10 A-NZ, RC E-10 B-NZ, RC E-10 C-NZ, RC E-10 D-NZ, RC E-10 S-NZ, and RC E-10 SP-NZ, the acceptable results of visual examinations and pressure tests performed each refueling outage provides reasonable assurance of continued structural integrity of these welds, and maintains an acceptable level of quality and safety.

[5]The licensee's Table 1 is not included in this Safety Evaluation.

Licensee's Proposed Alternative Examination (as stated):

> There are no alternate examinations proposed. Volumetric examination of the subject welds will be completed to the maximum extent practical.

Evaluation:

The Code requires 100% volumetric examination of the subject welds. Nozzle welds RC E-10 A-NZ through RC E-10 SP-NZ have limited coverage due to the nozzle to shell geometry and ID cladding. The transition, from the carbon steel vessel nozzle to the stainless steel safe-end to the stainless steel pipe, is large over a short distance. This causes transducer sound beam propagation angle to change abruptly thereby not fully interrogating the required ASME examination volume. Each nozzle has its own unique fit-up, weld, and finish contour which presents specific individual limitations on examination volume. The licensee considered grinding these transitions or adding weld material to increase examination volume and noted that these techniques could decrease the level of quality and safety in the Pressurizer nozzle safe-end welds.

The Code requirements are impractical to perform and to meet the Code requirements, design modifications would be necessary to provide access for examination. Imposition of the Code requirements would result in an undue burden on the licensee. The option of grinding the transitions or adding weld material to increase examination volume could decrease the level of quality and safety in the pressurizer nozzle safe-end welds.

The licensee has examined a significant portion, 53% - 77%, of the subject welds examination areas. Based on the licensee's examinations and the Code-required VT-2 visual examination conducted during the system leakage test each refueling outage, reasonable assurance of structural integrity of the subject components has been provided. Therefore, relief is granted pursuant to 10 CFR 50.55a(g)(6)(i).

2.5 Request for Relief No. 2IR-2, Revision 0 (Part C) Examination Category B-B, Item B2.40 Steam Generator (Primary Side) Tubesheet-to-Head Weld

Code Requirement: ASME Section XI, 1995 Edition through the 1996 Addenda, Examination Category B-B, Item B2.40 requires 100% volumetric examination, as defined by Figure IWB-2500-6 Steam Generator Tubesheet-to-Head Weld.

Licensee's Code Relief Request: Pursuant to 10 CFR 50.55a(g)(5)(iii) the licensee has determined that due to design and geometric configuration, it is impractical to meet the Code-required 100% coverage of Section XI for the welds listed in Table 5 below:

Table 5
Circumferential Welds

Weld Identification	Code Item/Number	Limitation	CRV Coverage
RC E-11A SEAM-1	B2.40	Steam Generator Supports	78%

Licensee's Basis for Requesting Relief (as stated):

Steam Generator Tubesheet to Head Weld – RC E-11A SEAM-1

As required by ASME Section XI, Table IWB-2500-1, Category B-B, requires this weld be examined volumetrically for essentially 100% of the weld length. Weld RC E-11A SEAM-1 can not be examined for essentially 100% of the weld length due to design (physical obstruction from four steam generator supports). ISI Drawing 1-NHY-650011 shows the four steam generator support pads. These pads are approximately 18" in length and block access to this weld in four locations. These obstructions limit the weld examination volume to 78%. This was the maximum extent achievable.

Five ASME Class 2 girth seam welds on this steam generator have been volumetrically examined during the 1st 10-Yr. ISI Interval. Welds RC E-11A SEAM-2, SEAM-3, SEAM-5, SEAM-6 and SEAM-8 were volumetrically examined and met ASME Code acceptance standards.

In addition to the limited volumetric examination, the Steam Generator tubesheet to head weld is subject to VT-2 visual examination conducted during the system leakage test each refueling outage as specified in Table IWB-2500-1, Examination Category B-P of the 1995 Edition through the 1996 Addenda of ASME Section XI.

North Atlantic believes that previous acceptable results of volumetric examination on 78% of the weld examination volume is representative of the entire weld. In addition to the volumetric examination, the acceptable results of volumetric examination of similar Class 2 girth welds on this steam generator, the acceptable results of visual examinations and pressure tests performed each refueling outage provides reasonable assurance of continued structural integrity of this weld, and maintains an acceptable level of quality and safety.

Licensee's Proposed Alternative Examination (as stated): There are no alternate examinations proposed. Volumetric examination of the subject welds will be completed to the maximum extent practical.

Evaluation:

The Code requires 100% volumetric examination of the subject weld. Weld RC E-11A SEAM-1 has limited coverage due to physical constraints of the steam generator supports. These pads are approximately 18" in length and block access to this weld in four locations. These obstructions limit the weld examination volume to 78%. The Code requirements are impractical to perform and to meet the Code requirements, design modifications would be necessary to provide access for examination. Imposition of the Code requirements would result in an undue burden on the licensee.

The licensee has examined a significant portion of the subject weld, obtaining 78% coverage. Based on the volumetric examination performed, the acceptable results of volumetric examination of similar Class 2 girth welds on this steam generator, and the acceptable results of visual examinations and the VT-2 pressure tests performed each refueling outage, reasonable assurance of continued structural integrity of this weld has been provided. Therefore, relief is granted pursuant to 10 CFR 50.55a(g)(6)(i).

2.6 Request for Relief No. 2IR-2, Revision 0 (Part D) Examination Category B-D, Item B3.130 Steam Generators (Primary Side) Nozzle-to-Vessel Welds

Code Requirement: ASME Section XI, 1995 Edition through the 1996 Addenda, Examination Category B-D, Item B3.130 requires 100% volumetric examination, as defined by Figure IWB-2500-7 Steam Generator (Primary Side) Nozzle-to-Vessel Welds.

Licensee's Code Relief Request: Pursuant to 10 CFR 50.55a(g)(5)(iii), North Atlantic has determined that, due to design and geometric configuration, it is impractical to meet the Code required 100% coverage of Section XI on the welds listed in Table 5.

Table 5
Nozzle Welds

Weld Identification	Code Item/Number	Limitation	CRV Coverage
RC E-11A 2A-NZ	B3.130	Nozzle-to-Shell Geometry and ID Cladding	84%
RC E-11A 2B-NZ	B3.130	Nozzle-to-Shell Geometry and ID Cladding	84%

Licensee's Basis for Requesting Relief (as stated):

Steam Generator Primary Nozzle Welds – RC E-11A 2A-NZ and RC E-11A 2B-NZ

As required by ASME Section XI, Table IWB-2500-1, Category B-D, these welds receive a volumetric examination. Welds RC E-11A 2A-NZ and RC E-11A 2B-NZ have limited coverage due to the nozzle to shell geometry and the ID cladding. The small distance between the nozzle and the weld does not provide sufficient room for the ultrasonic transducer to interrogate the Code required volume of these welds. The maximum achievable coverage for both these weld is 84%. The examination volumes achieved

are the maximum extent practical. North Atlantic believes that the achievable examination volumes are representative of the entirety of each nozzle weld.

In addition to the limited volumetric examination, the Steam Generator primary nozzle welds are subject to VT-2 visual examination conducted during the system leakage test each refueling outage as specified in Table IWB-2500-1, Examination Category B-P of the 1995 Edition through the 1996 Addenda of ASME Section XI.

North Atlantic believes that previous acceptable results of volumetric examination of the Steam Generator primary nozzle welds RC E-11A 2A-NZ and RC E-11B 2B-NZ, the acceptable results of visual examinations and pressure tests performed each refueling outage provides reasonable assurance of continued structural integrity of this weld, and maintains an acceptable level of quality and safety.

Licensee's Proposed Alternative Examination (as stated):

There are no alternate examinations proposed. Volumetric examination of the subject welds will be completed to the maximum extent practical.

Evaluation:

The Code requires 100% volumetric examination of the subject welds. The Steam Generator Primary Nozzle Welds RC E-11A 2A-NZ and RC E-11B 2B-NZ have limited coverage due to the nozzle to shell geometry and ID cladding. The small distance between the nozzle and the weld does not provide sufficient room for the ultrasonic transducer to interrogate the Code required volume of these welds. The Code requirements are impractical to perform and to meet the Code requirements, design modifications would be necessary to provide access for examination. Imposition of the Code requirements would result in an undue burden on the licensee.

The licensee has examined a significant portion (84%) of the subject welds examination areas. Based on the licensee's examinations and the Code-required VT-2 visual examination conducted during the system leakage test each refueling outage, reasonable assurance of structural integrity of the subject components has been provided. Therefore, relief is granted pursuant to 10 CFR 50.55a(g)(6)(i).

2.7 Request for Relief No. 2IR-4, Revision 0 (Part A) Examination Category C-A, Item No. C1.10 Letdown Heat Exchanger Shell Circumferential Weld

Code Requirement: ASME Section XI, 1995 Edition through the 1996 Addenda, Table IWC-2500-1 Category C-A, Item No. C1.10 Shell Circumferential Welds requires that circumferential shell welds at gross structural discontinuities be volumetrically examined. Note 1 [of Table IWC-2500-1] states that the examinations include essentially 100% of the weld length.

Licensee's Code Relief Request (as stated):

> Pursuant to 10 CFR 50.55a(g)(5)(iii), North Atlantic has determined that due to design and geometry, the examination requirement of "essentially 100%" of the weld length as specified in Table IWC-2500-1 Category C-A, Item No. C1.10 for weld CS E-3 C is impractical to meet.

Licensee's Basis for Requesting Relief (as stated):

> Excess Letdown Heat Exchanger Shell Circumferential Weld (CS E-3 C)
>
> Pursuant to 10CFR50.55a(g)(5)(iii), North Atlantic has determined that due to design and geometry, the examination requirement of "essentially 100%" of the weld length as specified in Table IWC-2500-1 Category C-A, Item No. C1.10 for weld CS E-3 C is impractical to meet. The examination coverage of this weld is limited to 43% due to vessel head to flange geometry and permanent physical obstruction. As depicted on drawing 1-NHY-650000, the heat exchanger head is directly welded to a flange. The inlet and outlet connections are located on the head, but adjoin the weld. This creates a limitation such that the transducers can only scan from the head side of the weld and can only cover the area between the inlet and outlet connections.
>
> Coverage for Excess Letdown heat exchanger weld CS E-3 C was conducted to the maximum extent practical with the design geometry and obstructions in place and we believe is representative of the entire weld. This weld is also subject to VT-2 visual examination each inspection period as specified in Table IWC-2500-1, Examination Category C-H of the 1995 Edition through the 1996 Addenda of ASME Section XI. The coverage obtained on this weld and the associated pressure testing performed provides reasonable assurance of continued structural integrity of this weld.

Licensee's Proposed Alternative Examination (as stated):

> No alternate examination for weld CS E-3 C is proposed.

Evaluation:

The Code requires 100% volumetric examination for the subject weld. The examination coverage of weld CS E-3 C is limited to the vessel head due to flange geometry and permanent physical obstruction. As depicted in the licensee's drawing, the heat exchanger head is directly welded to a flange. The inlet and outlet connections are located on the head, but adjoin the weld. This creates a limitation such that the transducers can only scan from the head side of the weld and can only cover the area between the inlet and outlet connections. The Code requirements are impractical for Weld CS E-3 C and to meet the Code coverage requirements, design modifications would be necessary to provide access for examination. Imposition of the Code requirements would result in an undue burden on the licensee. This weld is also subject to VT-2 visual examination.

The licensee has examined a significant portion, 43%, of the subject weld's examination area. Based on the licensee's examination and the Code-required VT-2 visual examination conducted each inspection period, reasonable assurance of structural integrity of the subject component has been provided. Therefore, relief is granted pursuant to 10 CFR 50.55a(g)(6)(i).

2.8 Request for Relief No. 2IR-4, Revision 0 (Part B) Examination Category C-B, Item C2.22 Steam Generator Main Steam Outlet Nozzle Inner Radius

Code Requirement: ASME Section XI, 1995 Edition through the 1996 Addenda, Table IWC-2500-1 Category C-B, Item No. C2.22 Nozzle Inside Radius Section requires that the inner radius sections of all nozzles at terminal ends of piping runs be volumetrically examined.

Licensee's Code Relief Request (as stated):

> Pursuant to 10CFR50.55a(g)(5)(iii), North Atlantic has determined that due to design and geometry, the volumetric examination requirement for nozzle inside radius sections of all nozzles at terminal ends of piping runs as specified in Table IWC-2500-1 Category C-B, Item No. C2.22 for weld RC E-11A 16-IR is impractical to meet.

Licensee's Basis for Requesting Relief (as stated):

> Steam Generator Main Steam Outlet Nozzle Inner Radius (RC E-11A 16-IR)
>
> Pursuant to 10CFR50.55a(g)(5)(iii), North Atlantic has determined that due to design and geometry, the volumetric examination requirement for nozzle inside radius sections of all nozzles at terminal ends of piping runs as specified in Table IWC-2500-1 Category C-B, Item No. C2.22 for weld RC E-11A 16-IR is impractical to meet. The steam generator main steam outlet nozzle is somewhat typical of a dropout nozzle, which is welded to the head. It is unlike a forged dropout, which has an inner radius transition. The main steam outlet nozzle contains a flow limiter device within the bore of the nozzle. This device makes a square transition to the nozzle making it ultrasonically impractical to examine and hence the 0% coverage assigned.
>
> The steam generator main steam outlet nozzle weld (RC E-11A 16-NZ) receives a volumetric and surface examination as specified in Table IWC-2500-1, Examination Category C-B of the 1995 Edition through the 1996 Addenda of ASME Section XI. Volumetric coverage of this weld is greater than 90%, which is considered full coverage in accordance with Code Case N-460. Code Case N-460 is approved for use in Regulatory Guide 1.147 and included in the Seabrook Station 2nd Ten-Year Interval ISI Program. Surface examination coverage of this weld is 100%. In addition, a VT-2 examination associated with the system pressure test is performed on this weld each inspection period as specified in Table IWC-2500-1, Examination Category C-H of the 1995 Edition through the 1996 Addenda of ASME Section XI. The full volumetric examination coverage, the 100% surface examination coverage, and visual examination

associated with the system pressure test conducted on the nozzle weld provide reasonable assurance of continued structural integrity for RC E-11A 16-IR.

Licensee's Proposed Alternative Examination (as stated):

No alternate examination of inner radius section RC E-11A 16-IR is proposed.

Evaluation:

The Code requires 100% volumetric examination for the subject weld. The steam generator main steam outlet nozzle is somewhat typical of a dropout nozzle, which is welded to the head. It is unlike a forged dropout, which has an inner radius transition. The main steam outlet nozzle contains a flow limiter device within the bore of the nozzle. This device makes a square transition to the nozzle making it ultrasonically impractical to examine.

The Code requirements are impractical for Weld RC E-11A 16-IR and to meet the Code coverage requirements, design modifications would be necessary to provide access for examination. Imposition of the Code requirements would result in an undue burden on the licensee. This weld is also subject to VT-2 visual examination each inspection period.

The steam generator main steam outlet nozzle-to-shell weld (RC E-11A 16-NZ) receives a volumetric and surface examination as specified in Table IWC-2500-1, Examination Category C-B of the 1995 Edition through the 1996 Addenda of ASME Section XI. Volumetric coverage of this weld is greater than 90%, which is considered full coverage in accordance with Code Case N-460 and the weld receives 100% coverage for the surface examination. Any significant degradation of the nozzle, if present, should be detected by these examinations. Therefore, the VT-2 examination and the surface and volumetric examinations of the nozzle-to-shell weld provide reasonable assurance of structural integrity of the subject weld.

Based on the full volumetric examination coverage, and the 100% surface examination coverage of the nozzle-to-shell weld RC E-11A 16-NZ and visual examination associated with the system pressure test conducted on the subject nozzle, reasonable assurance of continued structural integrity for weld RC E-11A 16-IR has been provided. Therefore, relief is granted pursuant to 10 CFR 50.55a(g)(6)(i).

2.9 Request for Relief No. 2IR-6 Examination Category C-B, Item C2.31 RHR Reinforcing Plate Welds to Nozzle and Vessel

Code Requirement: ASME Code, Section XI, Table IWC-2500-1, Item No. C2.31 requires a surface examination of the Reinforcing Plate Welds to Nozzle and Vessel. Item No. C2.33 requires a VT-2 visual examination of the nozzle to shell welds as well as evidence of leakage examination per Item No. C2.33 Note 5.

Licensee's Code Relief Request (as stated):

Pursuant to 10 CFR 50.55a(a)(3)(i), relief is requested from performing the Code required surface examination, the VT-2 visual examination and evidence of leakage as

directed in Table IWC-2500-1, Item Nos. C2.31 and C2.33 utilizing referenced Figure No. IWC-2500-4(c), and Item No.C2.33 Note 5.

Licensee's Basis for Requesting Relief (as stated):

The RHR Heat Exchanger Nozzle configuration is such that it does not conform to the referenced examination Figure No. IWC-2500-4(c). The inside of the vessel is inaccessible and the reinforcing plate is on the inside. Furthermore, the reinforcing plate does not possess a tell tale hole to verify evidence of leakage while the vessel is undergoing the system pressure test as required by Item No. C2.33 Note 5.

North Atlantic believes that performing the Alternate Examinations provides reasonable assurance that unallowable inservice flaws have not developed in the subject RHR Heat Exchanger Nozzle to Shell Welds. Furthermore, performing the Alternative Examinations provides reasonable assurance that development of unallowable inservice flaws will be detected and repaired prior to return of the RHR Heat Exchanger to service. Thus, an acceptable level of quality and safety will have been achieved, and allowing the proposed alternative examinations in lieu of the Code requirement will not endanger public health and safety.

Licensee's Proposed Alternative Examination (as stated):

- Perform a volumetric examination of the nozzle to shell welds.
- Perform a 100% surface examination of the nozzle to shell welds.
- Perform an inservice system leakage test and VT-2 visual examination per Table IWC-2500-1, Category C-H of the nozzle-to-shell welds.

The Alternate Examinations meet and exceed the required examinations of Code Category C-B, Item No. C2.30. It exceeds the requirements, as volumetric examination is not required due to the inside of the vessel being inaccessible. The technicality is that the examinations can be performed, but the nozzle to shell configuration is such that they cannot be performed in accordance with reference Figure IWC-2500-4(c) and Note 5 in Code Category C-B Item No. C2.30.

Evaluation:

The Code requires 100% surface examination for the subject Reinforcing Plate Welds to Nozzle and Vessel. Review of documents including sketches submitted by the licensee demonstrate that complete examination was not possible because the reinforcing plate is on the inside of the nozzle. Furthermore, the reinforcing plate does not possess a tell tale hole to verify evidence of leakage while the vessel is undergoing the system pressure test and the nozzle to shell configuration is such that the examinations cannot be performed in accordance with referenced Figure IWC-2500-4(c) and Note 5 in Code Category C-B Item No. C2.30.

The licensee has proposed as an alternative, to perform the following:

- Perform a volumetric examination of the nozzle to shell welds.
- Perform a 100% surface examination of the nozzle to shell welds.
- Perform an inservice system leakage test and VT-2 visual examination per Table IWC-2500-1, Category C-H of the nozzle to shell welds.

The licensee's proposed alternate examinations meet and exceed the Code-required examinations and provide an acceptable level of quality and safety. Therefore, the licensee's proposed alternative is authorized pursuant to 10 CFR 50.55a(a)(3)(i) for the second 10-year inservice inspection interval.

2.10 Request for Relief No. 2IR-10, Revision 0, Examination Category B-A, Item Nos. B1.11 and B1.21 Reactor Vessel Lower Head-to-Lower Shell Circumferential and Lower Head Circumferential Weld

Code Requirement: ASME Section XI, 1995 Edition through the 1996 Addenda, Table IWB-2500-1 Category B-A, Item No. B1.11 Circumferential Shell Welds requires that all circumferential shell welds be volumetrically examined. Note 2 of Table IWB-2500-1 states that the examination include essentially 100% of the weld length.

ASME Section XI, 1995 Edition through the 1996 Addenda, Table IWB-2500-1 Category B-A, Item No. B1.21 - Circumferential Head Welds requires that the accessible length of all welds be volumetrically examined. Note 2 of Table IWB2500-1 states that the inspection include essentially 100% of the weld length.

Licensee's Code Relief Request (as stated):

> Pursuant to 10CFR50.55a(g)(5)(iii), North Atlantic has determined that it is impractical to meet the "essentially 100%" of the weld length requirements of Table IWB-2500-1 Category B-A, Item No. B1.11 and B1.21 of the ASME Boiler and Pressure Vessel Code for welds RC RPV 104-141 and RC RPV 102-151 respectively.

Licensee's Basis for Requesting Relief (as stated):

> The Seabrook Station reactor vessel is a typical 4-loop Westinghouse Pressurized Water Reactor design. Located within the reactor vessel are certain obstructions that may limit the amount of ultrasonic examination coverage that can be achieved for certain welds.
>
> During the examination of the reactor vessel for the First Ten-Year Inservice Inspection Interval (conducted during the period of April 14, 1999 through April 19, 1999) it was determined that the required "essentially 100%" examination coverage for the Reactor Vessel Lower Head to Lower Shell

Circumferential Weld (RC RPV 104-141) and Reactor Vessel Lower Head Circumferential Weld (RC RPV 102-151) could not be achieved.

The basis for relief for each weld is identified as follows:

Reactor Vessel Lower Head to Lower Shell Circumferential Weld (RC RPV 104-141)

Weld RC RPV 104-141 is situated just below the 6 core support lugs, which are fixed in-place. Each core support lug occupies about 20 degrees of space including the attachment weld. This circumferential weld was completely scanned between the core lugs and the accessible areas below the lugs in both the parallel and perpendicular directions to achieve the maximum coverage. The total scan simple average for the weld is 80% and the total scan simple average for the volume is 73%.

The completion percentage was determined by calculating the percentage of actual coverage versus the total coverage for each examination angle and for each examination direction. This was separated into weld volume and total volume. A weight factor of 0.25 was then applied to the actual percent of coverage for each angle.

Reactor Vessel Lower Head Circumferential Weld (RC RPV 102-151)

Weld RC RPV 102-151 is located in elevation at the periphery of the lower head penetrations. The weld was scanned in numerous individual segments between and around the penetrations. The end effector was guided into position by cameras and scanning parameters were established with collision avoidance to maximize coverage. The total scan simple average for the weld is 61% and the total scan simple average for volume is 61%.

The completion percentage was determined by calculating the percentage of actual coverage versus the total coverage for each examination angle and for each examination direction. This was separated into weld volume and total volume. A weight factor of 0.25 was then applied to the actual percent of coverage for each angle.

Access to welds RC RPV 104-141 and RC RPV 102-151 from the outside of the reactor vessel was also evaluated and was not considered to be a viable option based on the extremely high person REM dose that would be incurred and the limited access. In order to obtain the required access to the welds, the use of staging, the removal of insulation and the preparation of the surfaces prior to performance of the examination would be required. After completion of the examination the reinstallation of the insulation and the removal of the staging would also be required. It is estimated that the total dose to obtain the additional coverage for both welds would be 40 to 48 REM.

Licensee's Proposed Alternative Examination (as stated):

> No additional examination of welds RC RPV 104-141 and RC RPV 102-151 will be performed. The coverage that was achieved was the maximum extent practical with the obstructions in place and is representative of the entire welds. The reactor vessel pressure boundary which includes the associated welds are pressure tested each refueling outage as specified in Table IWB-2500-1, Category B-P of the 1995 Edition through the 1996 Addenda of ASME Section XI. The volume of coverage obtained for welds RC RPV 104-141 and RC RPV 102-151 during the reactor vessel examination and the associated pressure testing performed provides reasonable assurance of the continued structural integrity of the subject welds and provides an acceptable level of quality and safety.

Evaluation:

The Code requirement to obtain essentially 100% volumetric coverage for weld RC RPV 104-141 is impractical because the weld is situated just below the six core support lugs, which are fixed in-place. Each core support lug occupies about 20 degrees of space including the attachment weld.

The Code requirement to obtain essentially 100% volumetric coverage for weld RC RPV 102-151 is impractical because the subject weld is located at an elevation at the periphery of the lower head penetrations. The weld was scanned in numerous individual segments between and around the penetrations. The end effector was guided into position by cameras and scanning parameters were established with collision avoidance to maximize coverage.

The licensee considered accessing the subject welds from the outside of the reactor vessel. However, this was not a viable option because of extremely high person REM doses that would be incurred and the limited access. To meet the Code coverage requirements, design modifications would be necessary to provide access for examination of the subject welds. Imposition of the Code requirements would result in an undue burden on the licensee. Based on the examinations which have been performed, any existing patterns of degradation would have been detected, thereby providing reasonable assurance of structural integrity of the subject welds. Therefore, relief is granted pursuant to 10 CFR 50.55a(g)(6)(i).

2.11 Request for Relief No. 2IR-11, Revision 0, Examination Category B-B, Item No. B2.11 Pressurizer Shell-to-Head Circumferential Weld

Code Requirement: ASME B&PV Code Section XI, 1995 Edition through the 1996 Addenda, Table IWB-2500-1, Examination Category B-B requires volumetric examination of essentially 100% of the weld length.

Licensee's Code Relief Request (as stated):

> Pursuant to 10CRF50.55a(g)(5)(iii), relief is requested from performing a volumetric examination on essentially 100% of the weld length on the basis that the Code requirement is impractical to achieve.

Licensee's Basis for Requesting Relief (as stated):

> A 15" thick concrete shield wall weighing approximately 85,000 pounds surrounds the Seabrook Pressurizer. The clearance between the shield wall and the Pressurizer vessel is approximately 9½". At the head-to-shell weld, this clearance is further reduced to approximately 3½" by an extensive safety valve support structure. The limited clearance and support structure obstructions made manual volumetric examination extremely difficult and not repeatable as demonstrated on a prefabricated mock-up.
>
> In the First Ten-Year ISI Interval, a state of the art automated ultrasonic system with a magnetic low profile scanner was utilized due to its ability to fit in the limited space, interrogate the Code required weld volume and its excellent repeatability. In spite of overcoming the highly restricted access, reinforcing plates and stiffeners on the Pressurizer shell prevented achievement of full coverage. Pressurizer head-to-shell weld examination coverage was limited to 83%.
>
> Additionally, the removal of welded attachments solely to achieve increased examination coverage results in an undue hardship with no compensating increase in quality and safety. The reinforcing plates and stiffeners are associated with seismic support of Pressurizer safety valves. Temporary support of this structure for access to remove the welded attachments is impractical. Also, repeated removal and re-welding of attachments has the potential to create negative metallurgical conditions to the shell of the Pressurizer vessel.

Licensee's Proposed Alternative Examination (as stated):

> No additional examinations will be performed. The Pressurizer head-to-shell weld was volumetrically examined to the maximum extent possible in accordance with Code requirements. In addition a VT-2 visual examination associated with the system pressure test is also performed on this weld each refueling outage as specified in Table IWB-2500-1, Examination Category B-P of the 1995 Edition through the 1996 Addenda of ASME Section XI. The coverage achieved and the associated pressure testing performed ensures the integrity of the subject weld.

Evaluation:

The Code requirement to obtain essentially 100% volumetric coverage for weld RC E-10 09 is impractical because a 15" thick concrete shield wall weighing approximately 85,000 pounds surrounds the Seabrook Pressurizer. The clearance between the shield wall and the Pressurizer vessel is approximately 9½". At the head-to-shell weld, this clearance is further reduced to approximately 3½" by an extensive safety valve support structure. The limited clearance and support structure obstructions made manual volumetric examination extremely difficult and not repeatable as demonstrated on a prefabricated mock-up. The licensee obtained 83% coverage of the subject weld. In addition, the licensee performs a VT-2 visual examination associated with the system pressure test on this weld each refueling outage.

To meet the Code coverage requirements, design modifications would be necessary to provide access for examination of the subject weld. Imposition of the Code requirements would result in an undue burden on the licensee. Based on the examinations which have been performed, any existing patterns of degradation would have been detected, thereby providing reasonable assurance of structural integrity of the subject welds. Therefore, relief is granted pursuant to 10 CFR 50.55a(g)(6)(i).

2.12 Request for Relief No. 2IR-12, Revision 0, Examination Category B-K, Item No. B10.10 Pressurizer Shell-to-Head Circumferential Weld

Code Requirement: ASME B&PV Code Section XI, 1995 Edition through the 1996 Addenda, Table IWB-2500-1, Examination Category B-K requires surface examination of each pressure vessel welded attachment.

Licensee's Code Relief Request (as stated):

> Pursuant to 10CRF50.55a(g)(5)(iii), relief is requested from performing the surface examination on the four Pressurizer welded attachments on the basis that the Code requirement is impractical to achieve.

Licensee's Basis for Requesting Relief (as stated):

> A 15" thick concrete shield wall weighing approximately 85,000 pounds surrounds the Seabrook Station Pressurizer approximately three quarters of the way around. The clearance between the shield wall and the Pressurizer vessel is approximately 9½". The north end of the cubicle has greater vessel to shield wall clearance, but is where safety valve and spray piping run. Ladders or platforms do not exist to make the examination area accessible nor can any ladders be placed due to restrictions by piping, conduit and other attachments.
>
> The Pressurizer lugs are located on the Pressurizer at elevation 23'-6". Potential access is gained by climbing a ladder on the outside of the shield wall and entering the cubicle at the top of the Pressurizer at elevation 50'. Safety valve structural steel is used for footing as no platform exists in the cubicle. The North Atlantic Safety Department evaluated the lack of normal and emergency access/egress as an unsafe work environment.
>
> In addition to area inaccessibility, each lug is braced on two sides with large structural elements, which would require removal. Insulation is also wrapped around the lugs and structural steel. Tools and rigging equipment to remove the lug braces would be required to provide 360 degrees of access on each lug. Inaccessibility and removal of the lug braces is impractical without a compensating increase in quality and safety.

These attachments are subject to VT-2 visual examination as part of the system leakage test on the Pressurizer vessel conducted each refueling outage as specified in Table IWB-2500-1, Examination Category B-P of the 1995 Edition through the 1996 Addenda of ASME Section XI.

North Atlantic believes that it is impractical to provide normal and emergency access/egress inside this highly restricted enclosure, and remove structural steel braces on these lugs to perform a surface examination without a compensating increase in quality and safety. North Atlantic also believes that based on acceptable results of VT-2 visual examinations performed during system leakage tests, and no known or published adverse examination results within the nuclear industry on attachments in ASME Code Category B-K, Item B10.10, there is reasonable assurance of continued structural integrity of the subject attachments and an acceptable level of quality and safety is maintained.

Licensee's Proposed Alternative Examination (as stated):

No alternative examination is proposed for these welded attachments.

Evaluation:

The Code-required 100% surface examination for welds RC E-10 A-Lug, RC E-10 B-Lug, RC E-10 C-Lug, and RC E-10 D-Lug is impractical, because a 15" thick concrete shield wall weighing approximately 85,000 pounds surrounds the Seabrook Station Pressurizer approximately three quarters of the way around. The clearance between the shield wall and the Pressurizer vessel is approximately 9½". The north end of the cubicle has greater vessel to shield wall clearance, but is where safety valve and spray piping run. Ladders or platforms do not exist to make the examination area accessible nor can any ladders be placed due to restrictions by piping, conduit and other attachments.

In addition to area inaccessibility, each lug is braced on two sides with large structural elements, which would require removal. Insulation is also wrapped around the lugs and structural steel. Tools and rigging equipment to remove the lug braces would be required to provide 360 degrees of access on each lug. The subject attachments are subject to VT-2 visual examination as part of the system leakage test on the Pressurizer vessel conducted each refueling outage.

The Code requirements are impractical and to meet the Code coverage requirements, design modifications would be necessary to provide access for examination of the subject welds. Imposition of the Code requirements would result in an undue burden on the licensee.

Based on the VT-2 visual examination associated with the system pressure test performed on the subject welds each refueling outage and no known or published adverse examination results within the nuclear industry on the subject attachments, reasonable assurance of continued structural integrity of the subject welds is provided. Therefore, relief is granted pursuant to 10 CFR 50.55a(g)(6)(i).

3.0 CONCLUSION

The staff evaluated the licensee's submittal and concluded that certain inservice examinations cannot be performed to the extent required by the Code at the Seabrook Station, Unit No. 1. For Requests for Relief Nos. 2IR-1 (Parts A and B), 2IR-2 (Parts A, B, C, and D), 2IR-4 (Parts A and B), 2IR-10, 2IR-11, and 2IR-12 discussed above, the staff concludes that the Code requirements are impractical for the subject welds and the examinations that have been performed provide reasonable assurance of structural integrity of the subject welds. In addition, for Request for Relief No. 2IR12, the system pressure test performed on the subject welds each refueling outage and the fact that there are no known or published adverse examination results within the nuclear industry on the subject attachments provide reasonable assurance of continued structural integrity of the subject weld. Therefore, relief is granted pursuant to 10 CFR 50.55a(g)(6)(i) for the second 10-year ISI interval. The staff has determined that the grant of relief is authorized by law and will not endanger life or property, or the common defense and security and is otherwise in the public interest giving due consideration to the burden upon the licensee that could result if the requirements were imposed on the facility.

For Request for Relief No. 2IR-6 the licensee's proposed alternative provides an acceptable level of quality and safety. Therefore, the licensee's proposed alternative is authorized pursuant to 10 CFR 50.55a(a)(3)(i) for the second 10-year inservice inspection interval.

Principal Contributor: Thomas McLellan

Date: March 21, 2001

SEABROOK STATION
Second 10-Year ISI Interval

SUMMARY OF RELIEF REQUESTS

Relief Request Number	SE Sec.	System or Component	Exam Category	Item No.	Volume or Area to be Examined	Required Method	Licensee Proposed Alternative	Relief Request Disposition
2IR-1, Rev 0 (Part A)	2.1	Reactor	B-A	B1.21 B1.40	Circumferential Head Weld Head-to-Flange Welds	Volumetric Volumetric and Surface	Volumetric coverages obtained be found acceptable.	Granted 10 CFR 50.55a(g)(6)(i)
2IR-1, Rev 0 (Part B)	2.2	Reactor	B-D	B3.90	Nozzle-to-Vessel Weld	Volumetric	Volumetric coverages obtained be found acceptable.	Granted 10 CFR 50.55a(g)(6)(i)
2IR-2, Rev 0 (Part A)	2.3	Pressurizer	B-D	B2.11	Circumferential Shell-to-Head Weld	Volumetric	Volumetric coverages obtained be found acceptable.	Granted 10 CFR 50.55a(g)(6)(i)
2IR-2, Rev 0 (Part B)	2.4	Steam Generator	B-B	B2.40	Tubesheet-to-Head Weld	Volumetric	Volumetric coverages obtained be found acceptable.	Granted 10 CFR 50.55a(g)(6)(i)
2IR-2, Rev 0 (Part C)	2.5	Pressurizer	B-D	B3.110	Nozzle-to-Vessel Weld	Volumetric	Volumetric coverages obtained be found acceptable.	Granted 10 CFR 50.55a(g)(6)(i)
2IR-2, Rev 0 (Part D)	2.6	Steam Generator	B-D	B3.130	Nozzle-to-Vessel Weld	Volumetric	Volumetric coverages obtained be found acceptable.	Granted 10 CFR 50.55a(g)(6)(i)
2IR-4, Rev 0 (Part A)	2.7	Let Down Heat	C-A	C1.10	Shell Circumferential Weld	Volumetric	Volumetric coverages obtained be found acceptable	Granted 10 CFR 50.55a(g)(6)(i)
2IR-4, Rev 0 (Part B)	2.8	Steam Generator	C-B	C2.22	Main Steam Outlet Nozzle Inner Radius	Volumetric	None	Granted 10 CFR 50.55a(g)(6)(i)
2IR-6, Rev 0	2.9	RHR Heat Exchanger	C-B	C2.30	Nozzle-to-Shell Weld	Surface and VT-2	Volumetric, Surface and VT-2	Authorized 10 CFR 50.55a(a)(3)(i)
2IR-10, Rev 0	2.10	Reactor	B-A	B1.11 B1.21	Lower Head-to-Lower Shell Circumferential Weld and Lower Head Circumferential Weld	Volumetric	Volumetric coverages obtained be found acceptable	Granted 10 CFR 50.55a(g)(6)(i)
2IR-11, Rev 0	2.11	Pressurizer	B-B	B2.11	Shell-to-Head Circumferential Weld	Volumetric	Volumetric coverages obtained be found acceptable	Granted 10 CFR 50.55a(g)(6)(i)
2IR-12, Rev 0	2.12	Pressurizer	B-K	B10.10	Pressure Vessel Welded Attachments	Surface	None	Granted 10 CFR 50.55a(g)(6)(i)

Enclosure 2