Docket file

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

May 27, 1994

Docket No. 50-443
Serial No. SEA-94-013

Mr. Ted C. Feigenbaum
Senior Vice President
and Chief Nuclear Officer
North Atlantic Energy Service Corporation
Post Office Box 300
Seabrook, New Hampshire 03874

Dear Mr. Feigenbaum:

SUBJECT: GENERIC LETTER 92-01, REV 1, REACTOR VESSEL STRUCTURAL INTEGRITY (TAC M83512)

By letter dated July 2, 1992, North Atlantic Energy Service Corporation (North Atlantic) provided its response to Generic Letter 92-01, Revision 1 (GL 92-01). The NRC staff has completed its review of North Atlantic's response and has determined that the information requested in GL 92-01, Revision 1 has been provided.

GL 92-01 is part of the staff's program to evaluate reactor vessel integrity for Pressurized Water Reactors (PWRs) and Boiling Water Reactors (BWRs). The information provided in response to GL 92-01, including previously docketed information, is being used to confirm that licensees satisfy the requirements and commitments necessary to ensure reactor vessel integrity for their facilities.

A substantial amount of information was provided in response to GL 92-01, Revision 1. These data have been entered into a computerized data base designated Reactor Vessel Integrity Database (RVID). The RVID contains the following tables: A pressurized thermal shock (PTS) table for PWRs, a pressure-temperature limit table for BWRs, and an upper-shelf energy (USE) table for PWRs and BWRs. Enclosure 1 provides the PTS table, Enclosure 2 provides the USE table for your facility, and Enclosure 3 provides a key for the nomenclature used in the tables. The tables include the data necessary to perform USE and RT_{pts} evaluations. These data were taken from your response to GL 92-01 and previously docketed information. References to the specific source of the data are provided in the tables.

Please verify that the information you have provided for your facility has been accurately entered in the summary data file. No response is necessary unless an inconsistency is identified. If no comments are received by June 30, 1994, the staff will consider your actions related to GL 92-01, Revision 1, completed and the staff will use the information in the tables for future NRC assessments of your reactor pressure vessel.

The information requested by this letter is within the scope of the overall burden estimated in GL 92-01, Revision 1, "Reactor Vessel Structural

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Integrity, 10 CFR 50.54(f)." The estimated average number of burden hours is 200 person hours for each addressee's response. This estimate pertains only to the identified response-related matters and does not include the time required to implement actions required by the regulations. This action is covered by the Office of Management and Budget Clearance Number 3150-0011, which expires June 30, 1994.

Sincerely,

Original signed by:

Albert W. De Agazio, Sr. Project Manager
Project Directorate I-4
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Enclosures:
1. Pressurized Thermal Shock Table(s)
2. Upper-Shelf Energy Table(s)
3. Nomenclature Key

cc w/enclosures:
See next page

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Mr. Ted C. Feigenbaum

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Summary File for Pressurized Thermal Shock

Plant Name	Beltline Ident.	Heat No. Ident.	ID Neut. Fluence at EOL/EFPY	IRT_{NDT}	Method of Determin. IRT_{NDT}	Chemistry Factor	Method of Determin. CF	%Cu	%Ni
Seabrook EOL: 10/17/ 2006	Lower Shell Plate	R1808-1	3.1E19	40°F	Plant Specific	31	Table	0.05	0.58
	Lower Shell Plate	R1808-2	3.1E19	10°F	Plant Specific	31	Table	0.05	0.57
	Lower Shell Plate	R1808-3	3.1E19	40°F	Plant Specific	37	Table	0.06	0.57
	Int. Shell Plate	R1806-1	3.1E19	40°F	Plant Specific	26	Table	0.04	0.64
	Int. Shell Plate	R1806-2	3.1E19	0°F	Plant Specific	31	Table	0.05	0.65
	Int. Shell Plate	R1806-3	3.1E19	10°F	Plant Specific	44	Table	0.07	0.65
	Int. Shell Axial Welds 101-124A/C	4P6052	3.1E19	-60°F	Plant Specific	34.3	Table	0.07	0.02
	Lower Shell Axial Welds 101-142A/C	4P6052	3.1E19	-60°F	Plant Specific	34.3	Table	0.07	0.02
	Int. to Lower Shell Circ. Weld 101-171	4P6052	3.1E19	-60°F	Plant Specific	34.3	Table	0.07	0.02

References for Seabrook

IRT_{NDT} and chemical composition data are from the August 17, 1992, letter from T. C. Feigenbaum (PSNH) to USNRC Document Control Desk, subject: Reactor Vessel Surveillance Capsule Report.

Fluence from August 17, 1992 PTS submittal.

Summary File for Upper Shelf Energy

Plant Name	Beltline Ident.	Heat No.	Material Type	1/4T USE at EOL/EFPY	1/4T Neutron Fluence at EOL/EFPY	Unirrad. USE	Method of Determin. Unirrad. USE
Seabrook	Lower Shell Plate	R1808-1	A 533B-1	61	1.85E19	78	Direct
EOL: 10/17/ 2006	Lower Shell Plate	R1808-2	A 533B-1	60	1.85E19	77	Direct
	Lower Shell Plate	R1808-3	A 533B-1	68	1.85E19	78	Direct
	Int. Shell Plate	R1806-1	A 533B-1	64	1.85E19	82	Direct
	Int. Shell Plate	R1806-2	A 533B-1	80	1.85E19	102	Direct
	Int. Shell Plate	R1806-3	A 533B-1	90	1.85E19	115	Direct
	Int. Shell Axial Welds 101-124A/C	4P6052	Linde 0091, SAW	110	1.85E19	156	Surv. Weld
	Lower Shell Axial Welds 101-142A/C	4P6052	Linde 0091, SAW	110	1.85E19	156	Surv. Weld
	Int. to Lower Shell Circ. Weld 101-171	4P6052	Linde 0091, SAW	110	1.85E19	156	Surv. Weld

References for Seabrook

UUSE and chemical composition data are from the August 17, 1992 letter from T. C. Feigenbaum (PSNH) to USNRC Document Control Desk, subject: Reactor Vessel Surveillance Capsule Report.

Fluence from August 17, 1992 PTS submittal.

Enclosure 3

Nomenclature and Tables

PRESSURIZED THERMAL SHOCK TABLES AND USE TABLES FOR ALL PWR PLANTS

NOMENCLATURE

Pressurized Thermal Shock Table

Column 1: Plant name and date of expiration of license.
Column 2: Beltline material location identification.
Column 3: Beltline material heat number; for some welds that a single-wire or tandem-wire process has been reported, (S) indicates single wire was used in the SAW process, (T) indicates tandem wire was used in the SAW process.
Column 4: End-of-life (EOL) neutron fluence at vessel inner wall; cited directly from inner diameter (ID) value or calculated by using Regulatory Guide (RG) 1.99, Revision 2, neutron fluence attenuation methodology from the quarter thickness (T/4) value reported in the latest submittal (GL 92-01, PTS, or P/T limits submittals).
Column 5: Unirradiated reference temperature.
Column 6: Method of determining unirradiated reference temperature (IRT).

Plant-Specific
This indicates that the IRT was determined from tests on material removed from the same heat of the beltline material.

MTEB 5-2
This indicates that the unirradiated reference temperature was determined from following MTEB 5-2 guidelines for cases where the IRT was not determined using American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section III, NB-2331, methodology.

Generic
This indicates that the unirradiated reference temperature was determined from the mean value of tests on material of similar types.

Column 7: Chemistry factor for irradiated reference temperature evaluation.
Column 8: Method of determining chemistry factor.

Table
This indicates that the chemistry factor was determined from the chemistry factor tables in RG 1.99, Revision 2.

Calculated

This indicates that the chemistry factor was determined from surveillance data via procedures described in RG 1.99, Revision 2.

Column 9: Copper content; cited directly from licensee value except when more than one value was reported. (Staff used the average value in the latter case.)

No Data
This indicates that no copper data has been reported and the default value in RG 1.99, Revision 2, will be used by the staff.

Column 10: Nickel content; cited directly from licensee value except when more than one value was reported. (Staff used the average value in the latter case.)

No Data

This indicates that no nickel data has been reported and the default value in RG 1.99, Revision 2, will be used by the staff.

Upper Shelf Energy Table

Column 1: Plant name and date of expiration of license.
Column 2: Beltline material location identification.
Column 3: Beltline material heat number; for some welds that a single-wire or tandem-wire process has been reported, (S) indicates single wire was used in the SAW process. (T) indicates tandem wire was used in the SAW process.
Column 4: Material type; plate types include A 533B-1, A 302B, A 302B Mod., and forging A 508-2; weld types include SAW welds using Linde 80, 0091, 124, 1092, ARCOS-B5 flux, Rotterdam welds using Graw Lo, SMIT 89, LW 320, and SAF 89 flux, and SMAW welds using no flux.
Column 5: EOL upper-shelf energy (USE) at T/4; calculated by using the EOL fluence and either the cooper value or the surveillance data. (Both methods are described in RG 1.99, Revision 2.)

EMA
This indicates that the USE issue may be covered by the approved equivalent margins analysis in a topical report.

Column 6: EOL neutron fluence at T/4 from vessel inner wall; cited directly from T/4 value or calculated by using RG 1.99, Revision 2, neutron fluence attenuation methodology from the ID value reported in the latest submittal (GL 92-01, PTS, or P/T limits submittals).

Column 7: Unirradiated USE.

EMA

This indicates that the USE issue may be covered by the approved equivalent margins analysis in a topical report.

Column 8: Method of determining unirradiated USE.

Direct

For plates, this indicates that the unirradiated USE was from a transverse specimen. For welds, this indicates that the unirradiated USE was from test date.

65%

This indicates that the unirradiated USE was 65% of the USE from a longitudinal specimen.

Generic

This indicates that the unirradiated USE was reported by the licensee from other plants with similar materials to the beltline material.

NRC generic

This indicates that the unirradiated USE was derived by the staff from other plants with similar materials to the beltline material.

10, 30, 40, or 50 °F

This indicates that the unirradiated USE was derived from Charpy test conducted at 10, 30, 40, or 50 °F.

Surv. Weld

This indicates that the unirradiated USE was from the surveillance weld having the same weld wire heat number.

Equiv. to Surv. Weld

This indicates that the unirradiated USE was from the surveillance weld having different weld wire heat number.

Enclosure 3 (Continued)

Sister Plant
This indicates that the unirradiated USE was derived by using the reported value from other plants with the same weld wireheat number.

Blank
Indicates that there is insufficient data to determine the unirradiated USE.