NORTHEAST UTILITIES
THE CONNECTICUT LIGHT AND POWER COMPANY
THE HARTFORD ELECTRIC LIGHT COMPANY
WESTERN MASSACHUSETTS ELECTRIC COMPANY
HOLYOKE WATER POWER COMPANY
NORTHEAST UTILITIES SERVICE COMPANY
NORTHEAST NUCLEAR ENERGY COMPANY

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August 30, 1982

Docket No. 50-245
A01615

Director of Nuclear Reactor Regulation
Attn: D. M. Crutchfield, Chief
Operating Reactors Branch #5
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

References: (1) D. G. Eisenhut letter to All BWR Licensees (Except Humboldt Bay and LaCrosse), dated February 26, 1981.

(2) W. G. Counsil letter to D. G. Eisenhut, dated July 1, 1981.

Gentlemen:

Millstone Nuclear Power Station, Unit No. 1
Implementation of NUREG-0313, Revision 1

In Reference (1), the NRC Staff transmitted NUREG-0313, Revision 1, "Technical Report on Material Selection and Processing Guidelines for BWR Coolant Pressure Boundary Piping", dated July, 1980. This NUREG sets forth the NRC Staff's revised acceptable methods to reduce the intergranular stress corrosion cracking (IGSCC) susceptability of BWR ASME Code Class 1, 2, and 3 pressure boundary piping and safe ends.

Northeast Nuclear Energy Company (NNECO) was requested in Reference (1) to review the ASME Code Class 1 and 2 pressure boundary piping, safe ends, and fitting material at Millstone Unit No. 1 to determine if it meets the material selection, testing, and processing guidelines set forth in NUREG-0313, Revision 1. In addition, the NRC Staff indicated that materials that do not meet these guidelines be identified and that appropriate changes to technical specifications to incorporate augmented inservice inspection requirements be proposed.

A complete review of the ASME Code Class 1 and 2 pressure boundary piping, safe ends, and fitting material, including weld metal, at Millstone Unit No. 1 to determine if it meets the material selection, testing and processing guidelines set forth in NUREG-0313, Revision 1, was accomplished by November, 1981. This review included the following:

(1) Collection of stress reports, isometric system drawings, certified material test reports, shop and field fabrication details (where available) as well as weld procedures for all non-carbon steel ASME Class 1 and Class 2 pressure boundary piping systems. (A breakdown of those materials present in each system is provided in Table 1.)

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(2) Evaluation of the stress rule index to further assess IGSCC susceptibility for each weld location. The stress rule index incorporates the sustained primary and secondary stress levels due to pressure, thermal expansion, deadweight, and welding residual stress. These data were added to the metallurgical data extracted from the search completed in Item (1) to create an IGSCC susceptibility matrix.

Furthermore, since IGSCC is dependent on three factors (environment, material, and stress) and the matrix is based on two factors (material and stress), the environment is considered ideally suited for IGSCC, which is a very conservative assumption.

(3) Placement of the weld, using the inservice inspection (ISI) weld designation, on the IGSCC susceptibility matrix based on the highest carbon content of the adjacent base materials and the stress rule index assigned to the weld in Item (2) as well as the weld's past history.

Due to the formulation of the IGSCC susceptibility matrices, only welds will be designated service sensitive or non-service sensitive, and not entire piping systems. Therefore, there are only two designations (service and non-service sensitive welds) and the conforming and non-comforming designations can be dropped. (A blank copy of an IGSCC susceptibility matrix is provided as Figure 1.)

(4) Identification of the welds falling into the high susceptibility region of the matrix. These welds are identified in Table 2 and will be inspected at the frequencies recommended in NUREG-0313, Revision 1.

The above program has been in effect since November, 1981 and the augmented inspections will commence during the upcoming September, 1982 refueling outage. Those portions of service sensitive lines in which unacceptable indications are found as a result of the augmented inspections will be replaced with low carbon material which meets the recommendations of NUREG-0313, Revision 1.

For reasons identified in NUREG-0313, Revision 1, welds located in the recirculation system will not be inspected under the augmented inservice inspection program outlined in NUREG 0313, Revision 1. However, these welds and recirculation riser welds will be monitored by a leakage detection system present inside the drywell.

With respect to LPCI welds CCAJ-1 and CCBJ-1, ultrasonic examination of the entire weld cannot be performed due to the weld geometry and configuration. Radiographic examination, which would require a complete core offload, would be difficult to perform and interpret, would be costly, and would provide little added assurance of safety. Practical alternative techniques for volumetrically examing these welds, which would produce meaningful results, are not presently available. Therefore, surface examination of these welds will be substituted for volumentric examinations.

Technical Specification changes to implement NUREG-0313, Revision 1, are not deemed necessary. However, the ISI manual for Millstone Unit No. 1 Class 1 and 2 components will be revised accordingly. Our ISI Program is already incorporated into our Technical Specification Section 4.13.

The model technical specifications attached to Reference (1) recommend that reactor coolant system leakage be limited to 5 gpm unidentified leakage and to a 2 gpm increase in unidentified leakage within any 24-hour period. Section 3.6.D of the Millstone Unit No. 1 Technical Specifications requires that reactor coolant leakage into the primary containment from unidentified sources not exceed 2.5 gpm. Therefore, there is no need to change our Technical Specifications.

We trust that this submittal adequately reponds to Reference (1).

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY

W. G. Counsil

W. G. Counsil
Senior Vice President

TABLE 1

SYSTEM	CLASS	PIPING MATERIAL	FITTING MATERIAL	FILLER WIRE
Core Spray A & B	1	A-358 304K A-358 304	A-351CF8M SB-166	ER 308L ER 308
Core Spray A & B	2	Carbon	Steel	System
CRD Return	1	Removed	Removed	Removed
Shutdown Cooling A & B	1	A-358 316K A-358 304 Carbon Stl.	A-351CF8M	ER 316L ER 308
Isolation Condenser				
Supply	1	A-358 316K	A-351CF8M	ER 316L
Return	1	A-358 316K A-358 304	A-351CF8M	ER 316L ER 308
Supply	2	A-358 316K A-358 304	A-351CF8M 304 Sol'n Annealed	ER 316L ER 308
Return	2	A-358 316K A-358 304	A-351CF8M	ER 316L ER 308
Cleanup A & B	1	A-358 316K A-358 304 A-358 316L	A-351CF8M	ER 308 ER 316L ER 308L
LPCI	1	A-358 316K A-358 304	A-351CF8M	ER 316L ER 308
LPCI	2	Carbon	Steel	System
Main Steam A/B/C/D	1	Carbon	Steel	System
Main Steam A/B/C/D	2	Carbon	Steel	System
Feedwater	1	Carbon	Steel	System
Recirculation				
A & B	1	A-358 TP304 A-312 TP304	A-182 304 A-403 304	ER 308 ER 308L
Bypass	1	Removed	Removed	Removed
Risers	1	A-358 304	A-403 304 A-351CF8M	ER 308
Manifold	1	A-358 TP304	A-182 304 A-240 304	ER 308 ER 308L

TABLE 2

HIGH SUSCEPTIBILITY WELDS

Recirculation System*

RCAJ-1	RCBJ-2
RCAJ-2	RCBJ-3
RCAJ-3	RCBJ-5
RCAJ-4	RCBJ-6
RCAJ-5	RCBJ-8
RCAJ-6	RCBJ-16
RCAJ-8	RCBJ-CC1
RCAJ-16	
RCAJ-CC1	

Shutdown Cooling System

None

Cleanup System

CUAJ-3	CUAJ-11
CUAJ-4	CUAJ-12
CUAJ-7	CUBF-2
CUAJ-8	CUBJ-8
CUAJ-9	CUBJ-12
CUAJ-10	CUBJ-16

LPCI System*

CCAJ-1	CCBJ-1

Core Spray System

None

Isolation Condenser System

ICAC-F-3	ICAC-F-14
ICAC-F-4	ICAC-F-15
ICAC-F-6	ICAC-F-16
ICAC-F-7	ICAC-F-20
ICAC-F-8	ICAC-F-21
ICAC-F-9	ICAC-F-22
ICAC-F-11	ICAC-F-23
ICAC-F-12	ICAC-F-24
ICAC-F-13	ICAC-F-25
ICBJ-2	

*See cover letter.

IGSCC SUSCEPTIBILITY MATRIX

STRESS RULE INDEX

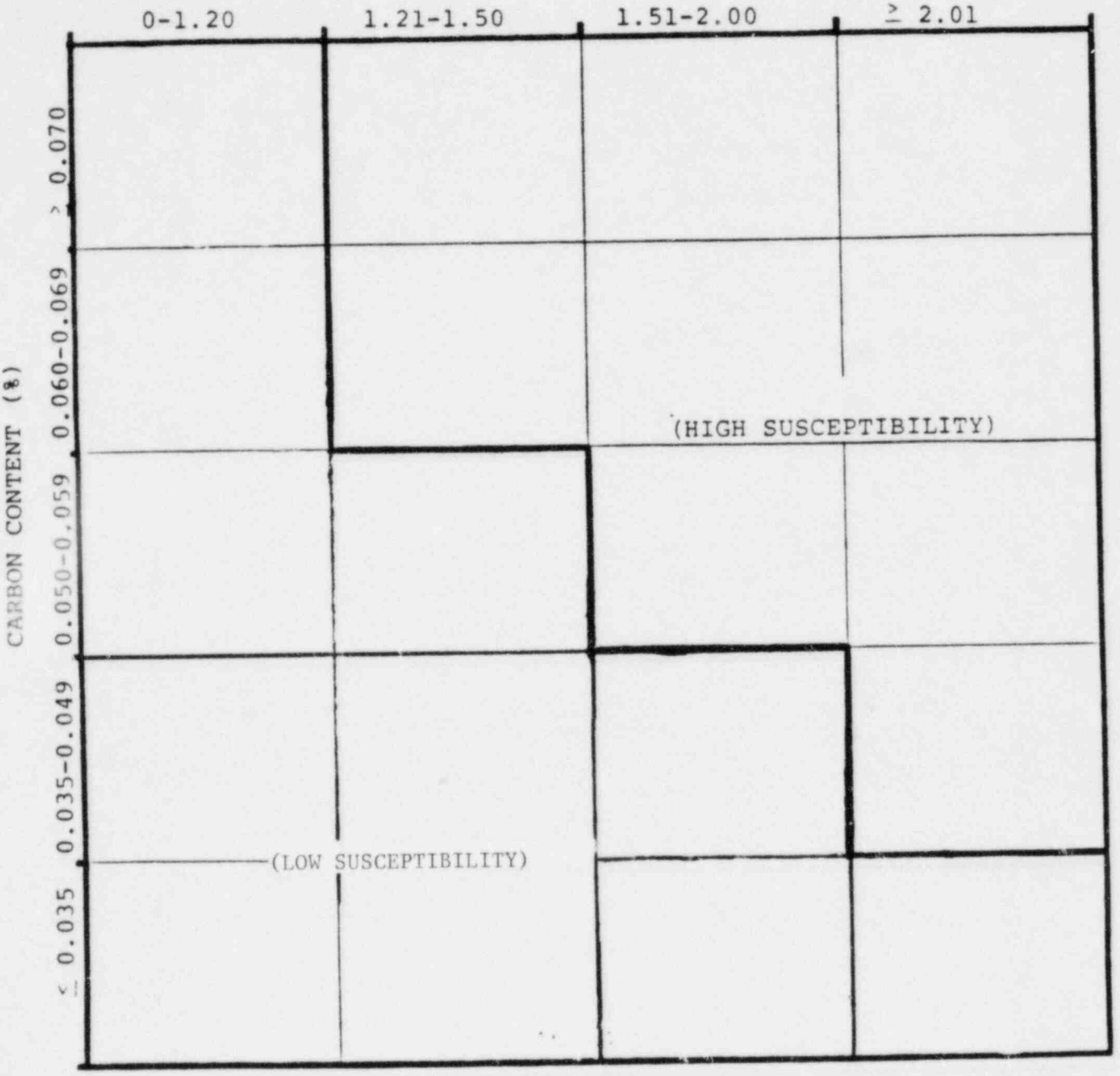

FIGURE 1

SHUTDOWN COOLING