NORTHEAST UTILITIES

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

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July 1, 1985

Docket No. 50-423
B11578

Director of Nuclear Reactor Regulation
Mr. B. J. Youngblood, Chief
Licensing Branch No. 1
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Gentlemen:

Millstone Nuclear Power Station, Unit No. 3
Ultrasonic Inspection Demonstration

Attached is Northeast Nuclear Energy Company's (NNECO) response to Materials Engineering Branch, Inservice Inspection Section and the NRC Region I questions concerning the ultrasonic inspection technique used as part of the Millstone Unit No. 3 Preservice Inspection program. Northeast Utilities Service Company (NUSCO) and Westinghouse performed an ultrasonic examination of a cast stainless steel pipe and elbow at the Millstone site on June 5, 1985 for Mr. Kerch, NRC, Region I.

We trust this response will resolve the Staff's concerns regarding this matter. If you have further questions, please contact our licensing representative.

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY
et. al.

By NORTHEAST NUCLEAR ENERGY COMPANY
Their Agent

J. F. Opeka
Senior Vice President

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cc: J. P. Durr, NRC Region I
Harry Kerch, NRC Region I

STATE OF CONNECTICUT)
) ss. Berlin
COUNTY OF HARTFORD)

Then personally appeared before me J. F. Opeka, who being duly sworn, did state that he is Senior Vice President of Northeast Nuclear Energy Company, an Applicant herein, that he is authorized to execute and file the foregoing information in the name and on behalf of the Applicants herein and that the statements contained in said information are true and correct to the best of his knowledge and belief.

Lorraine J. D'Amico
Notary Public

My Commission Expires March 31, 1988

MILLSTONE NUCLEAR POWER STATION, UNIT NO. 3

MATERIALS ENGINEERING BRANCH
INSERVICE INSPECTION SECTION

1. Calibration Blocks

a. Do the inspection records show that one calibration block was used to examine CSS elbows, CSS pipe, and ferritic nozzles?

Response: The calibration block identified in response to MTEB Question No. 250.12 C3 was used for all main coolant loop ultrasonic examinations and is identified as UT-7 on all examination records. Material certifications for the block were provided to Mr. H. Kerch, USNRC Region I, during his June 5, 1985 meeting with NUSCO and Westinghouse at the Millstone Unit No. 3 site.

b. Was an IWA-2240 demonstration performed that shows the block is equivalent for all wall thickness and diameters (Appendix III-3410), and material specification (Appendix III-3411); i.e., metallurgical structure, as the pipe and elbows?

Response: The calibration block thickness is 3.28" and was manufactured from a 31" ID cast elbow. The material supplier was Newport News Shipbuilding. The material is SA-351, Grade CF8A which is the same material specification as all of the main coolant primary loop piping. The range of diameters for all components examined is 27" ID to 31" ID. Wall thicknesses in the examination volumes were within $\pm$1" of the calibration block thickness. The demonstration conducted on June 5, 1985 for USNRC Region I showed evidence of penetration of the ultrasound. This evidence is further documented in the preservice examination data package where signals from counterbore and ID geometry were noted. Finally, the June, 1985 meeting included a demonstration on three samples from Westinghouse's WCAP-9894 study which illustrated detection of fatigue cracks at calibration sensitivity.

c. Sandusky and ESCO supplied the pipe; Newport News Shipbuilding supplied the calibration block. Are the 3 materials acoustically similar at Millstone Unit No. 3?

Response: The demonstration conducted on June 5, 1985 for USNRC Region I demonstrated the calibration block was nominally 6dB more attenuative than the cast pipe and 1dB to 2dB more attenuative than the cast elbow. This indicates the sensitivity was generally twice that required for the pipe and essentially the same as required for the elbow.

2. PSI Results

a. May 7, 1985 letter has data sheets of typical inspections that show 360° intermittent reflectors, 75% to 100% DAC. From the wall thickness measurements and angle beam data, can the utility show the counterbore was detected and interpreted?

Response: The utility provided a demonstration that was witnessed by Mr. Kerch, USNRC Region I. In the demonstration, I.D. reflectors were detected in the base material adjacent to weld LPI-EC2-SWB (item 190). The shape and location of the counterbore did not provide adequate reflection to establish counterbore as the cause. The indication recorded by Westinghouse technicians appears to be ID surface irregularities between the counterbore and root area. A plot of this information is attached showing the approximate location of the detected reflector.

b. Can a strong and consistent back reflection be seen on these welds?

Response: The back reflection was generally strong and consistent in areas examined during the demonstration.

c. What is the extent of surface preparation?

Response: The surface preparation of the welds and adjacent base material was classified as "FLUSH" on the examination data sheets and considered to be well prepared for ultrasonic examination.

At the request of the NRC Region I Inspector (Mr. H. Kerch) a comparison of the surface finish of the calibration standard used and the weld selected for the demonstration, was performed. The results of this comparison (using a S-22 microfinish Surface Roughness Scale Comparator) was that the calibration standard has a finish of 125 microinches and the actual weld finish was determined to be 32 microinches or better. This difference in surface finish would indicate that the examinations performed would be more sensitive.