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HL-846
0438V

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U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

PLANT HATCH - UNITS 1, 2
NRC DOCKETS 50-321, 50-366
OPERATING LICENSES DPR-57, NPF-5
REQUEST FOR ADDITIONAL INFORMATION
ON INSERVICE INSPECTION-CALIBRATION BLOCKS

Gentlemen:

By letter dated October 16, 1989, Georgia Power Company (GPC) submitted a request to use ASME Code Case N-461 for the purpose of upgrading our ultrasonic inspection and testing (UT) instrument calibration blocks. We have committed to have calibration blocks which meet the 1980 Section XI Code with Addenda through Winter 1981 available during the Spring 1990 Unit 1 outage. Code Cases N-98 (which has already been approved by the NRC) and N-461 provide ASME-approved allowable tolerances for calibration block thickness. The NRC staff has verbally requested additional information on our use of Code Case N-461. Specifically, we were asked to provide a technical discussion on the need to use N-461, a list of the calibration blocks affected with their nominal thickness and percent variation, and an estimate of the burden on GPC of not being able to use the Code Case. The enclosure to this letter provides the requested information.

This information and our original request to use Code Case N-461, apply to Plant Hatch Units 1 and 2 only. Please contact this office if you have questions.

Sincerely,

W. G. Hairston, III

GKM/eb

Enclosure: Inservice Inspection - Calibration Blocks

c: (See next page.)

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Georgia Power

c: Georgia Power Company
Mr. H. C. Nix, General Manager - Nuclear Plant
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U.S. Nuclear Regulatory Commission, Washington, D.C.
Mr. L. P. Crocker, Licensing Project Manager - Hatch

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Mr. J. E. Menning, Senior Resident Inspector - Hatch

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ENCLOSURE 1

PLANT HATCH - UNITS 1, 2
NRC DOCKETS 50-321, 50-366
OPERATING LICENSES DPR-57, NPF-5
REQUEST FOR ADDITIONAL INFORMATION
ON INSERVICE INSPECTION-CALIBRATION BLOCKS

Code Case N-461, "Alternative Rules for Piping Calibration Block Thickness", was approved by the ASME Boiler and Pressure Vessel Code Committee on November 30, 1988. It allows a calibration block thickness (for UT calibration) to be equivalent to the pipe wall thickness to be examined ± 25%. The Code Case applies when selecting calibration blocks in accordance with Section XI, Division I, III-3410. NRC-approved Code Case N-98 is similar to N-461, and allows for a variation in calibration block thickness of ± 0.25 inches when the thickness of the material to be examined is less than or equal to one inch. Piping welds in the primary system of a BWR, although generally not as thick as in a PWR, can exceed one inch. The following paragraphs discuss why variations in thickness exist, how our piping calibration blocks will conform to Code Requirements, and an estimate of the burden of not using Code Case N-461. Table 1 provides a list of calibration blocks greater than one inch thick, which require the use of Code Case N-461 to comply with Code Requirements.

Background

Many new UT requirements have surfaced since the design and construction of Plant Hatch. For newer generation plants, the awareness of the requirements for ultrasonic (UT) examinations and the access requirements of 10CFR50.55a have generally made the fabrication of calibration blocks an easier task. Extra lengths are usually added to piping spool pieces which are later cut and fabricated into calibration blocks. Counterbores to match up components of varying thicknesses are generally designed to be outside of the UT examination area. Fitting-to-fitting welds are reduced and weld crown buildups are prepared to better account for the impact of UT examination requirements.

The Plant Hatch primary system consists of piping, valves, elbows, tees, safe-ends, etc. of varying thicknesses. Nuclear piping, when manufactured, has an allowable tolerance of -12.5% from the nominal value (as permitted by ASME Specification SA-530) and has an unspecified maximum thickness based on the manufacturer's conservatism. Much of the pipe at Hatch is rolled and welded and variations exist in thickness around the circumference as a result of the manufacturing process. Some pieces such as safe-ends are forged and other fittings are cast. GE supplied piping was built to GE specifications and is non-standard.

ENCLOSURE 1 (Continued)

REQUEST FOR ADDITIONAL INFORMATION
ON INSERVICE INSPECTION-CALIBRATION BLOCKS

During the Unit 2 recirculation piping replacement, involving installation of 316 Nuclear Grade material, the number of IGSCC susceptible welds was reduced in the recirculation system. Manifolds and crosses were swaged (or forged) to produce integral reducing nozzles to fit-up with the riser piping. These nozzles vary in diameter and thickness along the axis of each nozzle, producing a difficult matchup with a "nominal" calibration block. Blocks were chosen to allow the best possible technical performance of the UT examination.

Counterbores in the original piping generally reach partially into the inspection area, producing a variance in the actual thickness of the examination area. When fittings are welded to piping, the fitting side is generally thicker and when fittings are welded to fittings the thickness may be considerably more than that associated with nominal piping. In addition, weld buildups were used many times in the case of an outside diameter (OD) mismatch to provide a smooth transition In all of these cases, it may be more appropriate to use a thicker calibration block rather than the thinner nominal piping block.

Piping Calibration Block Conformance

Plant Hatch calibration blocks will meet the requirements of the 1980 Edition of Section XI with Addenda through Winter 1981 to the extent practical. Ferritic blocks will be designed accordingly to Appendix III-3400 and austenitic blocks to Appendix III-3400, Supplement 7 as allowed by Appendix III-1100, footnote 1.

In cases where materials of the same specification are not readily available, materials of similar chemical analysis, tensile properties, and metallurgical structure will be used as allowed by Appendix III-3411. The Code requires that the calibration blocks be fabricated from one of the materials specified for the piping being joined by the weld. However to assure a more comprehensive examination, a block representative of each side will be used for dissimilar metal welds where IGSCC is considered to be a potential problem.

Calibration blocks within ± 12.5% of the thickness of the material to be examined are considered to be nominal wall thickness. For thicknesses outside of this range special considerations will be followed. Code Case N-98 is referenced by Regulatory Guide 1.147 and applies to IWA-2232 "Ultrasonic Examination" and is therefore appropriate to allow increased

REQUEST FOR ADDITIONAL INFORMATION
ON INSERVICE INSPECTION-CALIBRATION BLOCKS

thickness ranges for all calibration blocks used to examine materials one inch thick or less. For materials greater than 1" in thickness NRC acceptance of ASME-approved Code Case N-461 is needed to allow for the varying and non-standard thicknesses discussed above.

A listing is shown in Table 1 delineating the Code Case N-461 calibration blocks (above 1" thick), their primary use, and thickness variation. Non-approval of N-461 and subsequent replacement of these blocks to match the non-standard configuration would be costly and would not significantly benefit the examination. This is especially true in cases where there is a limited number of applicable examinations and the thickness varies in the examination area. Replacement of certain blocks will require special manufacture of "one-of-a-kind" pieces of material. Costs can run as high as $20,000 per piece and can require several months to procure. Total cost for new blocks required if Code Case N-461 is not approved is $120,000.

TABLE 1

HATCH UT CALIBRATION BLOCKS (> 1" THICK)
CODE CASE N-461

Calibration Block	Calibration Block Thickness (Inches)	Approximate Weld Thickness (Inches)	Percent Differential	Number Welds	Primary Component
12-H	1.531	1.8	25%	10	24" MS Nozzle to transition pieces
14-H*	1.031	.879	17%	1	20" RHR SS/CS interface from carbon steel side.
29-H*	1.50	1.8	17%	4	28" Recirculation Nozzle to safe-end from nozzle side.
31-H*	1.312	1.15	14%	10	12" Recirculation Nozzle to safe-end from nozzle side.
48-H	1.280	1.52	15%	1	28" Recirculation pipe to safe-end. Nominal wall of pipe is 1.280". However, inspection area also incompasses part of safe-end not counter-bored. In addition weld buildup was used on OD. Block 48-H is therefore considered a more appropriate block.

*Use of these calibration blocks not required by Apendix III for Code Exams, but assures a more comprehensive exam for dissimilar metal welds.

Calibration Block	Calibration Block Thickness (Inches)	Approximate Weld Thickness (Inches)	Percent Differential	Number Welds	Primary Component
77-H	1.375	1.156	19%	6	Non-standard fitting to fitting welds in 18" feedwater. Block thickness, while thicker, is more representative of situation than the nominal block for the 18" feedwater piping which is thinner.
78-H	1.20	1.05	14%	2	HNP-2 Core Spray safe-end to nozzle from safe-end side. Safe end is a special piece.
83-H	2.10	1.8	17%	2	Non-standard 18" feedwater elbow to valve. Nominal 18" piping well thickness 1.375" thick. Block chosen is more conservative.
85-H	1.2	1.06	13%	2	10" HNP-1 Core Spray line safe-ends. Safe-end is approximately 12" in diameter and is tapered. Block used is more representative of actual situation than nominal 10% piping block.

Calibration Block	Calibration Block Thickness (Inches)	Approximate Weld Thickness (Inches)	Percent Differential	Number Welds	Primary Component
92-H	2.3	1.86	24%	2	HNP-1 28" Recirculation Cross to Reducer. Normal 28" piping block is 1.28" thick. Block used is more representative of actual situation.
129-H	1.75	1.44	22%	6	Long-seam welds for integrally formed reducing nozzles (22" to 12" on 22" 316 NG header. Use 22" block (1.75" thick) as more representative than 12% (.792")