

# CATEGORY 1

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ACCESSION NBR: 9704160269      DOC. DATE: 97/04/09      NOTARIZED: NO      DOCKET #  
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SUBJECT: Submits relief request re class 1 ASME Section XI Category B-J to address cast stainless base metal ultrasonic weld exams.

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ROBERT C. MECREDY

Vice President  
Nuclear Operations

April 9, 1997

U.S. Nuclear Regulatory Commission  
Document Control Desk  
Attn: Guy Vissing  
Project Directorate I-1  
Washington, D.C. 20555

Subject: Relief Request No. 17  
Ginna Nuclear Power Plant Inservice Inspection  
ASME Section XI Required Examinations  
R.E. Ginna Nuclear Power Plant  
Docket No. 50-244

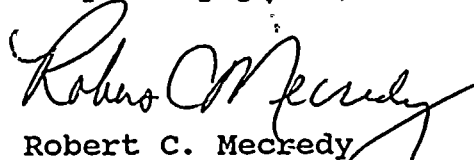
Dear Mr. Vissing:

The purpose of this letter is to seek approval of a relief request concerning Class 1, ASME Section XI Category B-J, to address Cast Stainless Base Metal Ultrasonic Weld Examinations. Justification and proposed alternatives are included in the attachments to this letter. It is requested that this relief request be approved by June 16, 1997 in order to be utilized for the upcoming 1997 Outage at R.E. Ginna Nuclear Power Plant.

This relief request deals with the employment of best effort ultrasonic examination techniques on welds associated with cast stainless components. Due to the nature of cast stainless and associated welds, attenuation variables adversely impact the performance of ultrasonic examinations. The performance of other volumetric techniques, such as radiography, on associated cast components will provide little increased quantitative benefit due to the high levels of background radiation that exist for the items addressed. Note that this relief request uses the same rationale as was used to conform with Code Case N-481 as part of the current ISI interval program. That code case was applied to RCP bowls made of cast stainless steel and was granted based on the inability of UT measures to be effective.

Rochester Gas and Electric will continue to evaluate new emerging inspection technology as they become available for this industry problem of performing ultrasonic examinations on cast stainless components.

Very truly yours,

  
Robert C. Mecredy

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Attachment  
REJ\448

xc: Mr. Guy Vissing (Mail Stop 14B2)  
Project Directorate I-1  
Washington, D.C. 20555

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

Ginna Senior Resident Inspector



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Relief Request No. 17

Category B-J, Cast Stainless Base Metal Ultrasonic Examination

I. Components for Which Relief is Requested:

1. Class 1, Category B-J, Reactor Coolant Cast Pump Terminal End to Cast Elbow Circumferential Welds and Associated Longitudinal Seam Welds.

| <u>Weld ID</u>      | <u>Type</u>   |
|---------------------|---------------|
| PL-FW-XIII          | Elbow-to-Pump |
| PL-FW-XII-LR (XIII) | Longitudinal  |
| PL-FW-XV            | Elbow-to-Pump |
| PL-FW-XI-LR (XV)    | Longitudinal  |

2. Class 1, Category B-J, Reactor Coolant Inlet/Outlet Cast Elbow to Nozzle Safe End/Pipe Circumferential Welds.

| <u>Weld ID</u> | <u>Type</u>       |
|----------------|-------------------|
| PL-FW-I-ASW    | Elbow-to-Safe End |
| PL-FW-IX-ASW   | Safe End-to-Elbow |
| PL-FW-III      | Elbow-to-Safe End |
| PL-FW-X        | Safe End-to-Elbow |
| PL-FW-IX       | Elbow-to-Pipe     |
| PL-FW-X-BSW    | Elbow-to-Pipe     |

II. ASME Requirements for Which Relief is Requested:

1. Category B-J within Table IWB-2500-1, specifies volumetric examination requirements that are to be performed on Terminal Ends, Longitudinal welds, as well as other welds associated with required Circumferential Welds.
2. Code Case N-460 specifies that a reduction in examination coverage on any Class 1 or Class 2 weld may be accepted provided the reduction in coverage for that weld is less than 10%.

III. Basis:

Supplement 4 (b)(4) of Appendix III identifies ultrasonic scanning requirements on Austenitic and Dissimilar Metal Welds. This paragraph further identifies that Cast items such as fittings, valve bodies, and pump casings may preclude meaningful examinations because of geometry and attenuation variables.

At R.E. Ginna Nuclear Power Plant, the Reactor Coolant Pump, Westinghouse Model 93, is cast stainless (A-351 Gr CF8M). The associated fittings (elbows) are also cast stainless (ASTM A-

351 Gr CF8M) and contain longitudinal seam welds. The Reactor Coolant Inlet/Outlet Wrought Safe End/Pipe to Elbow circumferential welds consists of fittings (elbows) that are cast stainless (ASTM A-351 Gr CF8M). When employing optimized ultrasonic techniques on these cast/wrought welds, the techniques may detect large flaws (25% or greater through wall) but are relatively ineffective in detecting smaller flaws. Therefore, the sensitivity is less than that required by the code.

Cast Stainless base metal and associated welds contain large grain structures, attenuation variables impact on performance of ultrasonic examinations. Experience has shown that these materials are not always amenable to ultrasonic examination and does not produce reliable and meaningful results. Currently, the industry's Performance Demonstration Initiative (PDI) is not addressing Cast Stainless Ultrasonic Examinations.

Due to the highly attenuative characteristics of the austenitic grain structure, ultrasonic examination coverage to the extent that is specified within Code Case N-460 may not always be achievable.

Radiography is an impractical technique to use and, if applied, the alternative volumetric examinations are not expected to provide any meaningful increase in benefit beyond the alternative presented due to the high levels of background radiation emitting from these areas.

#### IV. Proposed Alternate Method:

None. Applicable code-required volumetric examination will be completed to the maximum extent practical (a best effort ultrasonic examination of the cast stainless welds based on state-of-the-art techniques and associated achievable examination coverage). Ultrasonic examinations shall be performed from the wrought side of applicable components. We will continue to evaluate new emerging inspection technology as they become available. The code required surface examinations and system leakage tests will be performed.





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