

MRP

Materials Reliability Program _____ MRP 2004-020

July 20, 2004

Mr. Alex Marion
Director, Engineering
Nuclear Energy Institute
1776 I St NW STE 400
Washington, DC 20006-3708

Subject: Documentation to Support Materials Reliability Program Alloy 82/182 Pipe Butt Weld Safety Assessment for U.S. PWR Plants

Dear Alex,

Please find enclosed the following reports for your transmittal to the NRC under NEI letterhead.

- “Materials Reliability Program: Alloy 82/182 Pipe Butt Weld Safety Assessment for U.S. PWR Plants Designs (MRP-113)”, EPRI Report 1007029, July 2004.

The Alloy 600 ITG of the EPRI Materials Reliability Program is pleased to provide the enclosed reports to the NRC for their information. MRP-113, “Alloy 82/182 Pipe Butt Weld Safety Assessment for U.S. PWR Plants”, provides a final safety assessment for PWSCC of Alloy 82/182 pipe butt welds in PWR plants. This report is comprehensive and includes detail summaries of the supporting calculations. Collectively these documents form the technical basis for the MRP inspection plan Alloy 82/182 pipe butt welds, which is currently under development. The supporting technical reports will be transmitted upon request.

This safety assessment shows that there is a very low probability of pipe rupture as a result of PWSCC of Alloy 82/182 welds in primary system applications. The butt welds have been inspected nondestructively at intervals specified by Section XI of the ASME Code. Only a small number of welds have been found to contain axial cracks, only two welds worldwide have been found to have small leaks from axial cracks, and only one weld had a reported circumferential crack which was both short and shallow. None of these cases involved significant risk of failure due either to cracks reaching critical size or boric acid corrosion. Analyses show that there is a high probability that leakage will be detected prior to failure.

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MRP-113 completely replaces the interim safety assessment report (MRP-44, Part 1), which was issued in April 2001. This report is the top level safety assessment document for Alloy 82/182 pipe butt welds, and as such it references other closely related documents.

Please call if you have any questions.

Best Regards,

Christine King

Alloy 600 ITG

EPR Materials Reliability Program

cc: Larry Mathews, SNOG

Enclosures

1. MRP CD: "Materials Reliability Program Reactor Vessel Closure Head Penetration Safety Assessment Documentation: MRP-113 Proprietary and Non-Proprietary Versions"