

April 11, 2005

MEMORANDUM TO: Cathy Haney, Program Director
Policy and Rulemaking Program
Division of Regulatory Improvement Programs, NRR

FROM: Joseph L. Birmingham, Project Manager */RA/*
Policy and Rulemaking Program
Division of Regulatory Improvement Programs, NRR

SUBJECT: SUMMARY OF MARCH 24, 2005 MEETING WITH NUCLEAR ENERGY
INSTITUTE (NEI) AND MATERIALS RELIABILITY PROGRAM ON
ALLOY 600 AND DISSIMILAR METAL BUTT WELDS

On March 24, 2005, Nuclear Regulatory Commission (NRC) staff met with representatives of the Nuclear Energy Institute, the Electrical Power Research Institute (EPRI) Materials Reliability Program (MRP) and industry in a public meeting at NRC headquarters in Rockville, Maryland. A list of meeting attendees is provided in Attachment 1 of this memorandum. Slides used for the presentation at this meeting are in Attachment 2 (ADAMS Accession No. ML050880461).

At this meeting, industry discussed its activities on Alloy 600 base material and Alloy 82/182 weld metals (with the exception of steam generator tubing) including a review of current and pending inspection guidance and a schedule for future activities. Industry also discussed the impact on leak-before-break (LBB) assumptions.

Industry began by presenting its strategy for management activities. The strategy consisted of identifying and categorizing typical Alloy 600/82/182 locations in each reactor vendor type, developing safety assessment evaluations for each category, evaluating operating experience, determining inspection capabilities, developing inspection and evaluation guidance, and developing and implementing repair/replacement/mitigation options as needed. Industry provided a detailed handout of the typical Alloy 600/82/182 locations (Attachment 2, pages 5 and 6) which showed components of these alloys by reactor vendor. Industry had developed general guidance for all locations and had developed specific guidance for specific locations (Attachment 2, page 7); in terms of inspection, for example, MRP's general guidance calls for one-time bare metal visual inspections. Industry had issued a "mandatory requirement" in accordance with NEI 03-08 that plant must develop and document a management plan for Alloy 600/82/182 material.

Industry then discussed the key elements of a plant specific Alloy 600 management plan. The general inspection guidance pertains to Alloy 600/82/182 locations, such as, reactor pressure vessel bottom mounted nozzles, pressurizer heater sleeves, steam generator bowl drains, and a category for other locations, as well as implementing the requirements of NRC Order EA-03-009 regarding inspections of the reactor vessel upper head penetrations. Industry summarized by indicating that it believed it had an appropriate plan for management of Alloy 600/82/182 locations.

Industry discussed its inspection and examination (I&E) guidelines for Alloy 82/182 Butt Welds and the impact on leak-before-break. The I&E guidelines are contained in MRP report MRP-139 which currently is with the plant chief nuclear officers for approval. MRP had prepared a safety assessment of the issue and had concluded that there was not an immediate concern (based on the small number of known leaks/cracks and a probabilistic analysis that showed the effect on core damage frequency to be insignificant). However, industry stated the low safety risk was not considered a basis for doing only what the ASME Code now requires. These welds are within the in-service-inspection (ISI) population and are inspected per ASME Section XI.

Industry discussed Alloy 82/182 butt weld worldwide field experience which included some plants with leaks and some plants with cracks or indications. Industry observed that the number of leaks or cracks/indications was small and that differences in foreign inspections and configurations made comparisons difficult. Industry discussed its effort to meet established NDE qualification requirements for Alloy 600/82/182 butt welds and noted that, when access and surface conditions were adequate, flaw detection and sizing were reliable. However, because of difficulties, industry's effort to qualify procedures and personnel continues. Industry discussed with the staff the difficulties it had encountered and the effort it was making to resolve them.

Industry gave an overview of the MRP LBB evaluation effort. Among other actions, the MRP had reviewed the population of Alloy 82/182 welds where LBB had been applied, evaluated the most stressed locations for each piping system within each reactor type, determined the margins between critical flaw sizes and leakage flaw sizes including crack morphology effects, and evaluated the time available from leakage detection to failure. Based on its evaluation, industry concluded that the technical basis for LBB remains strong, there is adequate time between leakage detection and growth to critical flaw size to allow safe plant shut down, adequate margin remains considering alternative leak rate calculation methodologies, and that increased plant sensitivity to unidentified leakage provided additional margin beyond the technical specifications limit of 1 gallon-per-minute of unidentified leakage. A detailed report has been finished and will be provided to NRC pending final approval.

During the industry presentation, the staff asked many questions to clarify issues and to determine the status of the industry program for Alloy 600/82/182 management. At the end of the industry presentation, the staff expressed its concern that industry had not yet presented the final management plan to NRC. The staff indicated that it was preparing a proposed generic letter on the Alloy 600/82/182 issue for public comment. Industry acknowledged the staff's need to see a resolution to the issue but asked the staff to consider the schedule for final industry approval of the management program which industry expected would be by mid 2005. The staff indicated that it would continue to work on the generic letter and would follow the process for generic letter development. Any information submitted by industry would be considered within that process.

C. Haney

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At this point, the staff asked if there was any public comment and after addressing the public comment the meeting was adjourned.

Project No. 689

Attachments: As stated

cc: See list

C. Haney

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At this point, the staff asked if there was any public comment and after addressing the public comment the meeting was adjourned.

Project No. 689

Attachments: As stated

cc: w/atts: See list

ADAMS Accession No.: ML051010037

OFFICE	RPRP	EMCB\SC	RPRP\SC
NAME	JBirmingham	TChan	EMcKenna
DATE	04/05/2005	04/6/2005	04/8/2005

OFFICIAL RECORD COPY

**List of Attendees for March 24, 2005
Meeting on Alloy 600 and Leak-Before-Break Issues**

NAME	ORGANIZATION
Bill Bateman	NRC/NRR/EMCB
Terence Chan	NRC/NRR/EMCB
Edmund Sullivan	NRC/NRR/EMCB
William Koo	NRC/NRR/EMCB
Keith Wichman	NRC/NRR/EMCB
Allen Hiser	NRC/RES/EMCB
Joe Birmingham	NRC/DRIP/RPRP
Bill Cullen	NRC/RES/MEB
Ken Chang	NRC/NRR/RLEP
Robert Hsu	NRC/NRR/RLEP
Joel Page	NRC/RES/MEB
Amy Hull	NRC/NRR/RLEP
John Tsao	NRC/NRR/EMCB
Pat Patnaik	NRC/NRR/EMCB
Peter Wen	NRC/NRR/RLEB
Carol Moyer	NRC/RES/MEB
Charles Greene	NRC/RES/MEB
Hippolito Gonzalez	NRC/RES/MEB
Satyan Sharma	AEP
Dulal Bhowmick	Westinghouse
Warren Bamford	Westinghouse
Getachew Tesfaye	CEG
Bob Hardies	CEG
Marcos Herrera	Structural Integrity Associates
Tim Lupold	Constellation Energy
Greg Gerzen	Exelon
Alex Marion	NEI
Jim Riley	NEI
Christine King	EPRI
Craig Harrington	TXU Energy
Greg Kammerdeiner	First Energy
Altheia Wyche	SERCH/Bechtel
Dan Horner	McGraw Hill
Deann Raleigh	LIS, Scientech
Rick Mullins	Southern Co.
Ben Grambeau	Areva
Ashok Nana	Areva
Leslie Spain	Dominion Generation
Heshan Gunawardane	Areva
Kazuhiko Kishioke	Japan Atomic Power
Dana Covill	Progress Energy
Michael Robinson	Duke Power
Arthur Deardorff	Structural Integrity Associates
Terry Woods	TVA

Nuclear Energy Institute

Project No. 689

cc: Via email

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Distribution: Mtg w/NEI MRP&EPRI on butt weld SA 3/24/05
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