

September 3, 2002

MEMORANDUM TO: Christopher I. Grimes, 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 AUGUST 23, 2002, MEETING WITH INDUSTRY TO
DISCUSS BULLETIN 2002-02 ON REACTOR PRESSURE VESSEL
HEAD AND PENETRATION INSPECTIONS

On August 23, 2002, Nuclear Regulatory Commission (NRC) staff made a presentation to representatives of the Nuclear Energy Institute (NEI) and industry in a public meeting at NRC headquarters in Rockville, Maryland. Additional members of industry and the public participated via teleconference. At this meeting, the staff presented information regarding Bulletin 2002-02, "Reactor Pressure Vessel Head and Vessel Head Penetration Nozzle Inspection Programs," dated August 9, 2002. The staff also held a question and answer session on the information requested by the bulletin. The meeting attendees are listed in Attachment 1. The slides used by the staff in its presentation are in Attachment 2 which is available in the NRC document management system under ADAMS Accession # **ML022340653**.

Dr. Sheron, NRC Associate Director for Project Licensing and Technical Analysis, gave opening remarks. Dr. Sheron told the audience that the NRC takes the issue of cracking in control rod drive mechanism (CRDM) vessel head penetrations (VHPs) and the potential for reactor vessel head corrosion very seriously. He said the purpose of the meeting was to discuss with licensees Bulletin 2002-02 and to allow industry and the public an opportunity to ask questions regarding the bulletin. Alex Marion, of NEI, responded that industry took the issue seriously and appreciated the opportunity to discuss the content of Bulletin 2002-02 with the staff. The staff then began its presentation.

Michael Marshall, of the NRC, presented the agenda for the meeting and explained that there would be an opportunity for questions and answers after the NRC presentation was finished. He told the audience that information on Alloy 600 CRDM cracking and on reactor vessel head degradation was posted at the following websites:

<http://www.nrc.gov/reactors/operating/ops-experience/alloy600.html>, and
<http://www.nrc.gov/reactors/operating/ops-experience/vessel-head-degradation.html>.

Allen Hiser, of the NRC, provided background and an overview of Bulletin 2002-02. He noted that axial cracking in CRDM VHPs was identified in France in 1991. Analyses then determined that axial cracking was not a safety concern and that circumferential cracking was unlikely. In the Spring of 2001, circumferential flaws were found in domestic reactors. The NRC issued Bulletin 2001-01 requesting information on reactor susceptibility to CRDM VHP cracking, reactor head and penetration configuration, history of cracking or leaking, and information on

current and future inspections to detect cracking. In Spring 2002, corrosion was found in the reactor vessel head at Davis-Besse. The NRC issued Bulletin 2002-01 requesting information on the ability of licensee inspection and maintenance programs to identify degradation such as the degradation of the reactor pressure vessel head observed at Davis-Besse.

Mr. Hiser continued by presenting information on the areas of concern, the results of past CRDM VHP and vessel head inspections, the Bulletin 2002-02 susceptibility ranking, and a view of the status of future inspections. Regarding future inspections of CRDM VHPs, he noted that visual examination alone may not be sufficient to manage cracking and degradation and that the staff needed further information to support relying on visual examinations alone. He discussed in detail the information requests in Bulletin 2002-02. He described the methods of inspection that were stated in the bulletin as considered reasonable by the staff and explained that if licensees were not going to or could not employ these methods, that a technical justification for their approach should be provided in their bulletin response. The staff emphasized that licensees need to provide a technical basis for their inspection plans and for concluding that unacceptable vessel head wastage would not occur between inspection cycles. The staff stated that these information requests were for a one-time submittal and did not create new reporting requirements. The staff also said that licensees need to provide the criteria used to determine that an indication "shadow" or backwall anomaly resulting from ultrasonic testing is acceptable or rejectable.

At this point, Timothy Steingass, of the NRC, discussed the example supplemental inspections table in the bulletin. Mr. Steingass said that the example was not the only acceptable method of testing and that other approaches may also be technically sound. Mr. Steingass then discussed the strengths and weaknesses of the example inspection types. The inspection types include bare metal visuals, ultrasonic testing, eddy current and dye penetrant testing. He discussed how the frequency and type of supplemental inspection needed would vary based on the susceptibility ranking. Mr. Steingass concluded that detection of unacceptable flaws could not be accomplished by bare metal visual examination alone and that supplemental nondestructive examination (NDE) synergistically increased the effectiveness of each method. He said this approach was consistent with the methodology used in licensee Inservice Inspection Programs used to monitor components for service related failures.

Michael Marshall gave an overview of NRC plans for formalizing inspection requirements for vessel heads and VHP nozzles. The plan includes requesting changes to ASME Section XI to address deficiencies in inspection requirements and revising 10 CFR 50.55a to reflect the revised inspection requirements. NRC plans in the near-term to review the Material Reliability Program (MRP) proposed inspection plan and the MRP crack growth rate report. It was noted by Mr. Marion that the NRC staff has not found the MRP proposed inspection plan either acceptable or unacceptable as NRC has not yet received a complete technical basis for the plan. Once all the technical basis documents are complete, NEI will submit a complete package suitable for NRC staff formal review. Then, Mr. Marshall opened up the floor to questions.

Mr. Alex Marion then asked four technical questions from the MRP on Bulletin 2002-02 sent to the staff prior to the meeting (ADAMS Accession # **ML022390087**). The questions asked for staff clarification of parts of the bulletin. Bill Bateman, Chief of the Materials and Chemical Engineering Branch, responded that the staff had reviewed the questions and stated that

licensees need to propose and technically justify their inspection plans. Mr. Marion asked why the time line for low susceptibility plants had a 5-year interval rather than the 10-year interval proposed by the MRP. Dr. Sheron responded that these plants were ranked as low susceptibility but were not considered zero susceptibility. Industry has not established that unacceptable corrosion would not result during a 10-year interval. Kurt Cozens, of NEI, brought up the point that the bulletin was issued on a Friday and many plants did not get the bulletin until the following Monday. He asked if the staff would extend the deadline for the responses. Dr. Sheron agreed that licensees could start the 30-day time period from Monday, August 12, 2002. He indicated that the high susceptibility plants that had Fall outages had been contacted. Regarding an industry concern that only two vendors were available to do the type of NDE suggested by the bulletin, Dr. Sheron replied that, given the information he had from affected licensees, it was not clear that this was an issue. After a few more clarifying questions on the presentation, the meeting was closed.

Project No. 689

Attachments: As stated

cc: See list

**List of Attendees for August 23, 2002 Meeting
Bulletin 2002-02 on RPV Head and Penetrations**

NAME	ORGANIZATION
Alex Marion	NEI
Kurt Cozens	NEI
Dave Lochbaum	UCS
Larry Matthews	Southern Nuclear
R. S. Lewis	Entergy South
Bob Hardies	CCNPP
Bernie Rudell	CCNPP
Joseph Gallo	G & R
Steven Koff	Plain Dealer
Roy E. Hall	AEP
Edward J. Weinkam	NMC
Michael Woods	Post Gazette
Brendan Moroney	NRC/NRR
Dick Labott	PSEG Nuclear LLC
Jeff Keenan	PSEG Nuclear
Alison Kasik	Energy News Live
Don Mothene	FPL
Roger Huston	Licensing Support Services
Gregory Skat	DEC
Erdal Caba	CP&L
Gary Moffatt	SCE&G
Tim Alley	Duke Energy
Dan Schlater	Framatome
Ron Payne	Framatome
Terry Knuettel	TVA
Herb Fonticella	Dominion
Vaughn Wagoner	CP&L
Michael G. Mosirr	PSE&G
Michael R. Robinson	Duke Energy
Scott Boggs	FPL
Jonathan Gull	Entergy
R. Dana Couch	TVA
David Distel	Exelon
Mike McDevitt	SCE/SONGS
Daniel Horner	McGraw Hill
Altheia Wyche	SERCH Licensing Bechtel
Deann Raleigh	LIS SCIENTECH
Spyros Tralforoc	SAT Consultants
R. Hermann	S.I.
Brian Kemp	NMC
Sam Collins	NRC/NRR
Brian Sheron	NRC/NRR/ADPT
Richard Barrett	NRC/NRR/DE

(Cont.)

**List of Attendees for August 23, 2002 Meeting
Bulletin 2002-02 on RPV Head and Penetrations (Cont.)**

William Bateman	NRC/NRR/EMCB
Wichman Keith	NRC/NRR/EMCB
Terence Chan	NRC/NRR/EMCB
Tim Steingass	NRC/NRR/EMCB
Bo Pham	NRC/NMSS
Bill Cullen	NRC/RES
Carol Moyer	NRC/RES
Jim Davis	NRC/RES
Jeff Hixon	NRC/RES
Petteri Tuppana	NRR
Nathan Sanfillipo	NRC/NRR/EMCB
Andrea Lee	NRC/NRR/EMCB
Michael Marshall	NRC/NRR/EMCB
Steve Bloom	NRC/NRR/EMCB
Joseph Birmingham	NRC/NRR/RPRP
E. Andruszkiewicz	NRC/NRR/EMCB
Scott Wall	NRC/DLPM
Jay Collins	NRC/DLPM
Theresa Valentine	NRC/NRR/DSSA/SPSB
Giovanna Longo	NRC/OGC
Debbie Jackson	NRC/RES/DET
Girija Shukla	NRC/DLPM
Jon Hopkins	NRC/DLPM

Nuclear Energy Institute

Project No. 689

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ADAMS Accession Number: ML022470091

*See previous concurrence

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OFFICE	RPRP	EMCB	RPRP
NAME	JBirmingham*	WBateman*	SWest
DATE	08/ 28 /2002	08/ 30 /2002	09/03/2002

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