

**Conference on
Vessel Head Penetration Inspection, Cracking and Repairs**

sponsored by

US Nuclear Regulatory Commission and Argonne National Laboratory

NRC Research and ANL are planning a three-day conference addressing issues of flaw detection, crack growth rate modeling and applications for nickel-base alloys used as PWR pressure-boundary components, including vessel head penetrations (VHPs – upper and lower), safe-ends, and other attachments involving mixed metal, nickel-base alloy welds. The discovery of cracks and leakage from the control rod drive (CRD) housings of several US and foreign reactors has raised this issue to a high level of regulatory concern.

This conference will take place in Gaithersburg, MD, on March 24–26, 2003. Participants will include a domestic and an international audience consisting of reactor operators, regulatory personnel, and researchers involved in the solution of the structural integrity issues arising from crack growth and leakage through nickel-base alloy components, cladding and associated attachment welds. The materials and structural elements fabricated from them to be discussed include Alloys 600 and 690, and compatible mixed metal welds of Alloys 82/182 and 52/152. The structure of the conference will include presentations by industry, regulatory and laboratory representatives, as well as open discussion of the critical issues. The presented papers will be published as Conference Proceedings of the Nuclear Regulatory Commission (NUREG/CP-series).

The topics on the program will include (a) flaw inspection procedures, descriptions of NDE results, and user experience with vessel head mock-ups or other NDE training and certification procedures; (b) descriptions of crack growth rate (CGR) experiments, interpretation and analysis of CGR data; (c) probabilistic fracture mechanics analysis of VHP structural elements, including experimental or analytical stress analyses; (d) programs that address the mitigation of the cracking or other corrective actions, especially repair procedures; and (e) the application of these results in operating plants, including follow-on inspections of repaired components, and evaluations of success or failure of these methods.

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March 24-26, 2003

Monday morning – March 24: Opening Session 8:30 a.m. – 9:45 a.m.

Housekeeping: Ken Natesan, ANL

Opening remarks; Mike Mayfield, USNRC

Keynote address: Ashok Thadani, USNRC

Monday morning – March 24: 10:00 a.m. – 11:45 a.m.

Structural Analysis and Fracture Mechanics Issues (Four presentations)

Chair: Gery Wilkowski, EMCC, & Peter Scott, Framatome-ANP

This session will cover structural analysis aspects of the vessel head penetrations, including probabilistic fracture mechanics analysis and experimental or analytical stress analyses for axial and circumferential cracking. Other topics include metallography and failure analysis of flaws in thick section alloys 600 and 182 in PWR environments.

Monday afternoon: 1:00 p.m. – 5:00 p.m. (15 minute break ~ 3:05)

Inspection Techniques, Results and Future Developments (Nine presentations)

Chair: Steve Doctor, PNNL, & Ed Hackett, USNRC

This session will cover all aspects of inspection procedures and results of inspections performed (visual and NDE). Other topics include user experience with vessel head mock-ups or other NDE training and certification procedures as well as plans for further development of inspection tools and programs underway to improve performance.

Tuesday morning – March 25: 8:00 a.m. – 11:45 a.m. (15 minute break ~ 9:45)

Crack Growth Rate Studies for the Disposition of Flaws (Eight presentations)

Chair: Deborah Jackson, USNRC, & Tetsuo Shoji, Tohoku University

This session will cover descriptions of crack growth rate experiments, interpretation of the results and analysis to obtain crack growth rate laws for Alloys 600, 690, 182/82 and 152/52 in PWR environments.

Tuesday afternoon: 1:00 p.m. – 5:10 p.m. (15 minute breaks at 2:15 & 3:55)

Mitigation of Nickel-Base Alloy Degradation and Foreign Experience (Ten presentations)

Chair: Steve Fyfitch, Framatome-ANL, & Karen Gott, SKI

This session will cover programs to address mitigation of the cracking or other corrective actions and could also include the mechanistic basis on which they are based. Of particular interest are descriptions of repair procedures including possible future materials and fabrication techniques

Tuesday evening banquet & speaker: NRC commissioner (TBD)

Wednesday morning – March 26: 8:00 a.m. – 11:45 a.m. (15 minute break ~ 10:00)

Continued Plant Operation (Seven presentations)

Chair: Al Hiser, NRR, & Warren Bamford, Westinghouse

This session will cover continued plant operation after repair or other mitigation actions including follow-on inspections and inspection programs of repaired components. Also of interest in this session are descriptions of on-going research in this and related areas

Wednesday afternoon: 1:00 p.m. – 4:00 p.m. (15 minute break ~ 2:15)

Panel Session & Session Summaries

Chair: Christine King, EPRI, and Bill Cullen, RES/DET/MEB

The afternoon session begins with session summaries by session chairs. After the break, there will be a panel session, beginning with short presentations by each of the participants. The panel participants will be Brian Sheron and Jack Strosnider, USNRC, Alex Marion, NEI and Larry Mathews, MRP. The panel presentations will be followed by open discussion focusing on questions, challenges to/from public, industry, and regulatory representatives.

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Conference Registration Form

(Use a separate form for each attendee. Please type or print clearly.)

Deadline for Registration: March 3, 2003

Name: _____

Dept.: _____

Company: _____

Street/P.O.: _____

City: _____

State/Province: _____

Zip/Postal Code: _____

Country: _____

Phone: _____

Fax: _____

e-mail: _____

There is no registration fee for the conference. There will be an optional conference amenity fee for those wishing to have lunch and attend the banquet.

Lunch (\$22/day). Check the days you wish to have lunch.

March 24 March 25 March 26 Total lunch cost: _____

Please check if you wish to attend banquet on 25th Banquet cost (\$50) _____

Total payment _____

Please return completed form with check or credit card information to:

**Argonne National Laboratory Conference Services,
Bldg 201, 9700 South Cass Avenue
Argonne, IL 60439
Telephone (630) 252-5585; Fax: (630) 252-5533;
E-Mail: jbrunsvold@anl.gov**

Make checks payable to Argonne National Laboratory

Only Visa or Mastercard is acceptable.

Charge to my _____ VISA _____ MasterCard

Account Number _____ -- _____ -- _____ -- _____

Expiration Date _____

Name as imprinted on credit card _____

Authorized Signature _____

Hotel Reservations

Please fax, mail or phone your reservation directly to the hotel.

Argonne or USNRC will not process hotel reservations.

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March 24-26 2003

Marriott Washingtonian Center
9751 Washingtonian Boulevard
Gaithersburg, MD 20878
USA

Hotel Reservations: 800-228-9290 (NRC Mtg.)
Phone: 1 301-590-0044
Fax: 1 301-212-6155
Website: <http://marriotthotels.com/WASWG/>
(faxable/maillable Hotel Reservations Form below)

Check-in 3:00 pm -- Check-Out Noon

Please Reserve _____ room(s) at the Marriott Washingtonian Center as follows:

Smoking _____ Non-Smoking _____

Name: _____ No. in Party: _____

Company: _____

Address: _____

City: _____ State: _____ Zip: _____

Phone Number: _____

Arrival Date: _____ Time: _____ Departure Date: _____

Rate Single or Double \$150.00 + 12% Tax

Guaranteed by: First Night Deposit Check _____ (Mark X if enclosed)

or indicate Credit Card, giving data below:

Charge to my _____ VISA _____ MasterCard _____ AmEX

Account Number _____ -- _____ -- _____ -- _____

Exp. Date _____

Name as imprinted on credit card _____

Authorized Signature _____

The room block remains open for reservations until **March 3, 2003**. Cancellations must be received 24 hours prior to arrival.