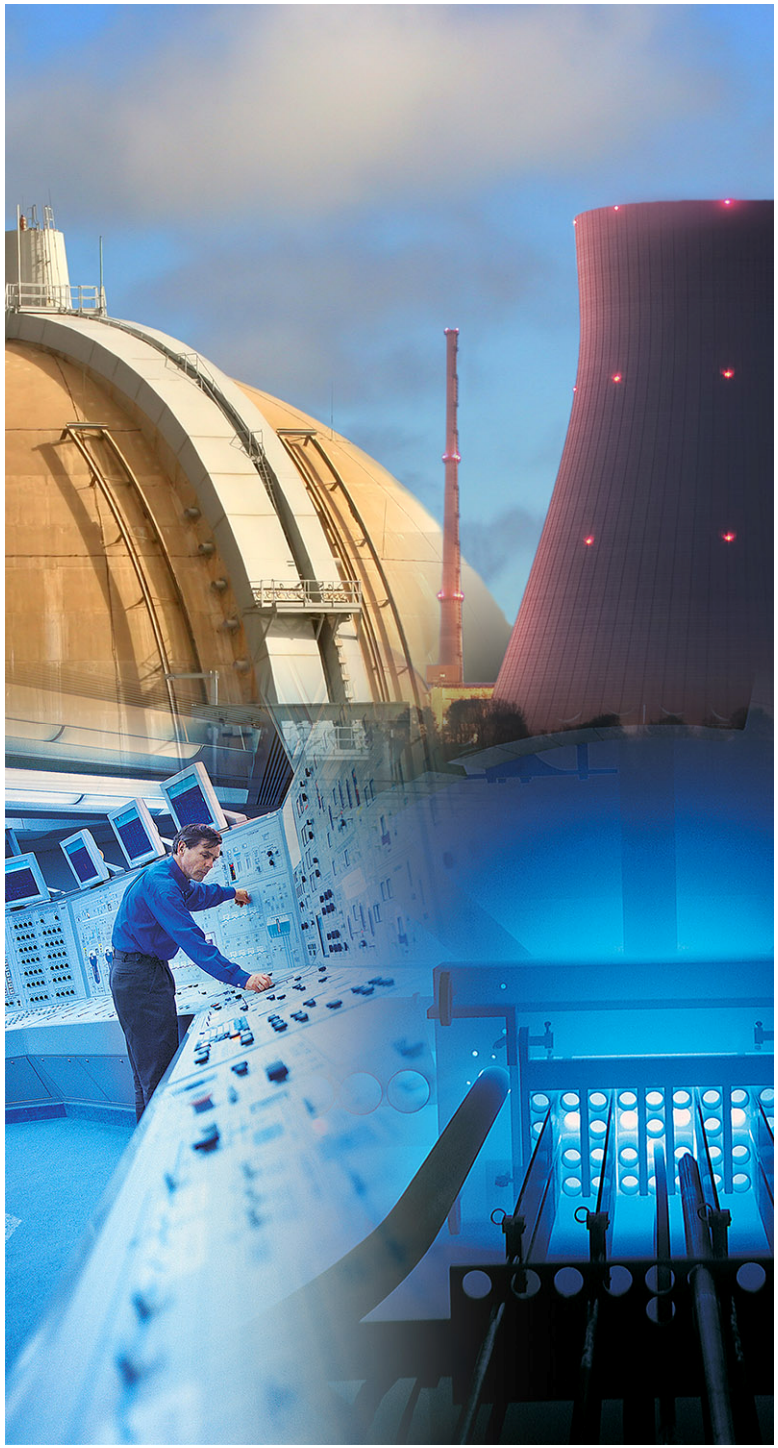

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PDI Piping Program Update

PDI/NRC Meeting
May 2009

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PDI Piping Program

Objectives

- General Piping Program Status
- Personnel Qualification Status
- Procedure Qualification Status
- Other PDI Activities
- Summary

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PDI Piping Program: General Status

- Piping Program Schedule - 2009
  - Personnel Qualifications
    - Automated (38)
    - Manual (144)
    - Schedule filling up
  - New Procedure Qualifications
    - Automated (4) – All phased array
    - Manual (0)
  - Procedure Expansions
    - Automated (3) – All phased array
    - Manual (2) – 1 phased array, 1 conventional

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PDI Piping Program: General Status (continued)

- PDI Participation from outside the U.S. continues to be high
  - 2009 Participants:
    - Spain
    - Korea
    - Taiwan
    - Japan
    - Switzerland
    - Germany

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PDI Piping Program: General Status (continued)

- New Sample Fabrication Continues
  - New Weld Overlay Fabrication Flaw Samples
    - Planar and Laminar flaws
    - Allow sizing technique studies
    - Goal to provide guidance for accurate sizing

  - New Supplement 11 Samples
    - >600K allocated in 2009
    - Adding additional OWOL and FSWOL samples
    - Increase library of WOLs
      - Over both DM and SM welds

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Current Manual UT Qualified Workforce

- ✓ Ferritic – Detection only – 521 (501)
- ✓ Ferritic – Detection and Length – 474 (454)
- ✓ Ferritic – Detection, Length and Sizing – 282 (271)

- ✓ Austenitic and Ferritic – Detection only – 339 (231) (without IGSCC)
- ✓ Austenitic and Ferritic – Detection & Length – 300 (205) (without IGSCC)
- ✓ Austenitic and Ferritic – Detection, Length & Sizing – 113 (73) (without IGSCC)

- ✓ IGSCC, Austenitic And Ferritic, Detection – 102 (111)
- ✓ IGSCC, Austenitic And Ferritic, Detection and Length – 92 (100)
- ✓ IGSCC, Austenitic And Ferritic, Detection, Length and Sizing – 33 (48)

- ✓ Dissimilar Metal Weld Detection only – 109
- ✓ Dissimilar Metal Weld Detection and Length – 82
- ✓ Dissimilar Metal Weld Detection, Length and Sizing - 14

- ✓ Weld Overlay – 136 (123)
- ✓ IGSCC, Aust. And Ferritic, Detection, Length, Sizing and Weld Overlay – 26 (29)
- ✓ IGSCC, Aust. And Ferritic, Det., Length, Sizing, Weld Overlay and DM Det. And Length - 4

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Current Auto UT Qualified Workforce

- ✓ Ferritic – Detection only – 112 (99)
- ✓ Ferritic – Detection and Length – 111 (94)
- ✓ Ferritic – Sizing – 57 (50)

- ✓ Austenitic and Ferritic – Detection only – 58 (7) (without IGSCC)
- ✓ Austenitic and Ferritic – Detection & Length – 58 (7) (without IGSCC)
- ✓ Austenitic and Ferritic – Detection, Length & Sizing – 29 (0) (without IGSCC)

- ✓ IGSCC, Austenitic And Ferritic, Detection – 47 (45)
- ✓ IGSCC, Austenitic And Ferritic, Detection and Length – 47 (44)
- ✓ IGSCC, Austenitic And Ferritic, Detection, Length and Sizing – 24 (25)

- ✓ Dissimilar Metal Weld Detection - 64
- ✓ Dissimilar Metal Weld Detection and Length – 60
- ✓ Dissimilar Metal Weld Detection, Length and Sizing - 39

- ✓ Weld Overlay – 43 (39)

- ✓ IGSCC, Aust. And Ferritic, Detection, Length, Sizing and Weld Overlay – 24 (19)
- ✓ IGSCC, Aust. And Ferritic, Det., Length, Sizing, Weld Overlay and DM Det., Length & Depth - 14

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Procedure Qualification Status

New Procedure Qualifications scheduled for 2009:

2 - Full-Auto Phased Array for DM Welds

1 – Full-Auto Phased Array Supplement 3 (Ferritic) from the ID

1 – Full-Auto Phased Array Supplement 2 w/IGSCC

Procedure Expansions efforts scheduled for 2009:

1 – Full-Auto Phased Array for DM Welds (add raster scanning)

1 – Full-Auto Phased Array for DM Welds (add intermediate wedge sizes)

1 – Full-Auto Phased Array for Supplement 11 (expanded thickness range and expanded examination volume for optimized WOL)

1 – Manual Phased Array for DM welds (expand useful examination angles down to 30° for coverage, and add CE charging nozzle and RCP configurations)

1 – PDI-UT-1 expansion to allow use of 5 MHz frequency up to 2.0” in component thickness for ferritic weld examination

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Other PDI Activities

- Implementation of the PDI Inquiry Process has begun
  - Inquiry Board and processing procedure have been established
  - Inquiries to PDI procedures and processes are now being accepted
  - Two inquiries processed thus far
    - 2008-02 – examination of piping branch connections with PDI-UT-1 and PDI-UT-2
    - 2009-02 – Required candidate prerequisites for PDI testing
  - Inquires for which approved responses have been developed are available on EPRIQ, under the “PDI Inquiries” link

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Other PDI Activities

- All PDI generic procedures are currently being reviewed and revised, as necessary
  - Driving consistency between RPV and Piping generic procedures
  - Purpose is formatting, editorial and adding intent clarifications – not expected to require any additional qualification work
  - All RPV procedure revisions are presently in review
  - Piping procedures are in revision process now

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Summary

- Many procedures being qualified or expanded in 2009 – Almost exclusively phased array technology
- Heavy personnel qualification activity scheduled

  For the more complex techniques, the pool of technicians is not that large
- Phased array techniques - now qualified for most nuclear piping applications
  - Everyone is working to keep phased array examination technology caught up with the constant influx of new DM weld and weld overlay designs that will need to be examined over the next couple of years
- PDI is also processing inquiries
- All generic procedures are being reviewed and assessed as to the need for revision

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