



*Performance Demonstration Initiative  
Dissimilar Metal Weld Program Update  
February 6<sup>th</sup> and 7<sup>th</sup> 2003*

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*Overview*

- ^ PDI History
- ^ Status of specimen fabrication
- ^ Inside surface examination status and findings
- ^ Outside surface examination status and findings
- ^ Future actions
- ^ Summary/Conclusions



## *Appendix VIII History*

- ▲ **Appendix VIII appeared in 1989 Addenda of ASME Section XI**
- ▲ **Requires demonstration of effectiveness of ultrasonic inspection procedures and personnel using blind tests on representative samples containing realistic defects**
- ▲ **EPRI studies in 1988-90 evaluated options for implementation**
- ▲ **Utility AD Hoc Committee formed out of the NDE Center Steering Committee in 1990 to organize, fund, and direct implementation of Appendix VIII**
- ▲ **PDI formed in 1991 from AD Hoc Committee**



## *Appendix VIII History*

- ▲ **PDI continues to lead effort in implementing Appendix VIII**
  - Sample Fabrication
  - Supporting Demonstration Program
  - Sample Relief Requests
  - Quarterly meetings with NRC to discuss program status and modifications
  - With NDE Center support, commented on proposed rule and developed and supported code modifications to align PDI, Section XI Code and 10CFR50.55a



## *Status of Supplement 10 Specimen Fabrication*

- ▲ **100% of samples have been delivered and fingerprinted**
  - Some paperwork issues still remain open
- ▲ **Outside Surface Practice Samples to be designed and ordered in Spring of 2003**
  - One test set is presently being used for practice until samples are delivered



## *Inside surface examination status and findings*

- ▲ **One vendor has completed both Phase 1 (Open) and Phase 2 (Blind) demonstrations**
  - 6 candidates qualified for Supplements 2, 3 and 10 detection from inside surface
    - Limited axial flaw detection for Supplements 2 and 10
  - 5 candidates qualified for Supplements 2, 3 and 10 length sizing from inside surface
  - 4 candidates qualified for Supplement 3 depth sizing
  - No candidates qualified for depth sizing of Supplements 2 and 10
- ▲ **Second vendor presently attempting full Supplement 3 and a limited Supplement 10 (Core Flood Configuration Only) from inside surface**
- ▲ **Third vendor working with Supplement 2 and 10 samples preparing for Phase 1 demonstration scheduled for summer 2003**



## *Outside surface examination status and findings*

### ▲ Manual Examination

- Procedure qualified for detection and length sizing with limitations
  - 3<sup>rd</sup> round of demonstrations underway
    - 20 candidates have attempted qualification
  - 9 candidates are qualified for detection
  - 5 candidates have detection and length sizing
  - No candidates have been successful in depth sizing
    - Average RMS 0.200"
- 5 candidates presently testing several more scheduled



## *Findings (Outside Surface Examinations)*

### ▲ Automated Examinations

- One procedure qualified for detection and length sizing
  - (BWR ranges only)
- 2 candidates qualified for detection and length sizing
- Depth Sizing unsuccessful (Procedure and personnel)
  - 0.155" RMS achieved
- Second demonstration underway and third scheduled for Summer 2003



## *Future actions*

- ▲ **Demonstrations scheduled on a as needed basis manual and automated**
- ▲ **Training program being developed**
  - Funding approved for this year
- ▲ **Guided Practice program being developed**
  - Available by Summer 2003



## *Future Actions*

- ▲ **Additional research underway to reduce limitations**
  - Search unit design
  - Technique development
- ▲ **Practice samples for outside surface examinations being designed**
  - Presently using 1 set of test samples as practice
- ▲ **Support field applications on an as needed basis**
  - Search unit selection
  - Expedited demonstrations
  - Mock-up design



## **PDI** *Summary*

### **^ Program is operational**

- Procedures and equipment qualified for both manual and automated examinations
- Sufficient number of qualified individuals available to support spring outages
- Additional demonstration underway to support fall outages



## *Supplement 10 Examination Schedule*

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**Project Manager Piping and Bolting**  
**Performance Demonstration**  
**EPRI NDE Center**



## *Examination Schedule*

- ▲ Schedules based on PDI survey-not official commitments
- ▲ Spring 2003
  - San Onofre (Vendor Westinghouse RPV, LMT Piping/DM Welds)
    - RPV Examination ( Piping Inside Surface Examination Supplement 3)
    - Several DM welds within various systems
    - Completed with Qualified Procedures and Personnel
  - St. Lucie 2 (Framatome)
    - One Supplement 10 weld to be examined
  - Oconee (Framatome)
    - Inside surface examinations on Reactor Coolant System ( Piping Inside Surface Examination Supplement 3 and 10 examinations)
  - Nine Mile Point Unit 1(WESDYNE)
    - Several Welds within various systems
  - Pilgrim (Framatome)
    - Several Welds within various systems



## *Examination Schedule*

- ▲ Schedules based on PDI survey-not official commitments
- ▲ Spring 2003 Continued
  - Hope Creek (Framatome)
    - Several DM welds within various systems
  - LaSalle Unit 2 (General Electric)
    - Several DM welds within various systems
  - Palisades (Framatome)
    - Several DM welds within various systems
  - Duane Arnold (LMT)
    - Several DM welds within various systems
  - Surry (Westinghouse)
    - Inside surface examinations on Reactor Coolant System (RCS) welds coupled with full vessel examination
  - Monticello (LMT)
    - Several DM welds within various systems



## *Examination Schedule*

- ▲ Fall examination schedule being prepared
- ▲ Qualifications will be performed on a priority basis