



United States Nuclear Regulatory Commission

NRC-EPRI Collaborative Programs on:

- Corrosion of Reactor Pressure Boundary Materials in Concentrated Boric Acid Solutions
- Examinations of Nozzles Removed from Discarded North Anna 2 Vessel Head

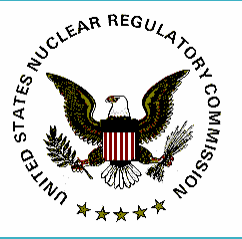
NRC Headquarters
March 22, 2004



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NRC-Industry Collaboration on CRDM Cracking Issues

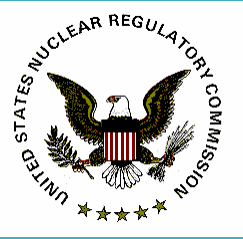
Task Number	Task
1	Alloy 600/82/182 – (a) crack growth testing Alloy 600 and (b) Alloy 82/182
2	Alloy 690/52/152 – (a) crack growth testing Alloy 690, and (b) Alloy 52/152
3	Boric Acid Corrosion Testing – (a) Industry program now underway, (b) Examine Nozzle #2 from Davis-Besse, (c) BAC program at ANL
4	(a) RPV Head Penetration PFM, PRA & Nozzle stress analysis by FEA, (b) Residual stresses in A600 CRDM tubing
5	Failure Analysis of North Anna RPV head – determine impact of findings on susceptibility models, visual inspection validity, and inspection and repair methods; nozzles removed and under inspection at PNNL
6	Nozzle 46 Davis-Besse RPV head – determine meaning of NDE signals (shadow, or “anomalous indication”) and implication for future inspections, now at PNNL
7	Mitigation Testing – determine viability and utility of mitigation options, both for Alloy 600 base material (penetrations, etc.) and Alloy 82/182 weld material (J-grooves, butt welds, etc.) (fully an industry effort at present)



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NRC Program – Exams of NA2 Nozzles

- **SOW to be issued – days from now**
- **Thorough NDE of Nozzle #31 or Nozzle #10 – Emphasis on J-weld**
 - ID of penetration tube using a focused probe to inspect the J-groove weld
 - ET of the J-groove weld crown and buttering
 - UT on the stainless steel cladding to insonify the buttering and J-groove weld
 - Dry surface phased array inspection of the triple point and buttering/J-groove weld
- **Destructive exams of selected flaws – tube and weld**
 - Sizing, reflecting surfaces, prob. of detection
 - Mechanistic analysis (SEM, analytical TEM)