



RIC 2013 Stress Corrosion Cracking Including Control Rod Drive Mechanisms

David Alley
EPNB/DE/NRR
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Agenda

- SCC in Refueling Water Storage Tanks
- SCC in Seal Cap Enclosures
- SCC in Control Rod Drive Mechanism (CRDM) Housings

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Refueling Water Storage Tanks

- 3 recent instances of cracking
- At least 1 SCC



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Refueling Water Storage Tanks

- Chloride SCC
 - Near tank bottom
 - OD originated
 - Consider
 - Ground Water
 - Deicing salt
 - Temp < traditional Chloride SCC limit



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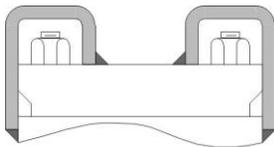
Refueling Water Storage Tanks

- Resolution
 - Tanks repaired
 - Information Notice being prepared

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Seal Cap Enclosures

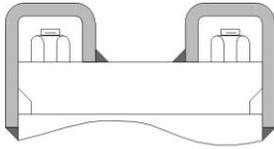
- Some Class 1 check valves
 - Body to Bonnet gasket leakage
- Seal cap enclosures installed to contain leakage



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Seal Cap Enclosures

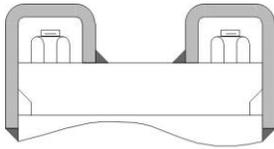
- Valve body, enclosure, welds
 - 300 series stainless
- Bolting
 - A286 stainless



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Seal Cap Enclosures

- High oxygen environment
 - A286 subject to IGSCC
- Risk of bolt failure
 - Loss of integrity



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Seal Cap Enclosures

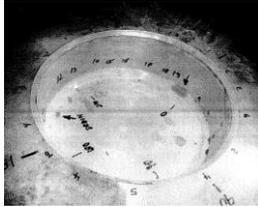
- Seal Cap Enclosures have also leaked



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Seal Cap Enclosures

- Welds appear to be subject to IGSCC in this environment



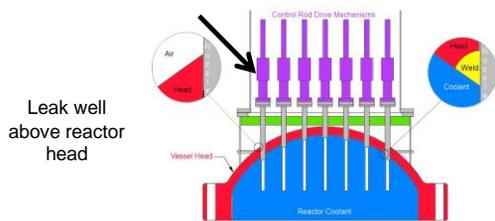
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Seal Cap Enclosures

- Resolution
 - Valve inspected
 - Bolts found to be sound
 - Removal of Seal Caps and repair of gaskets underway throughout the fleet.

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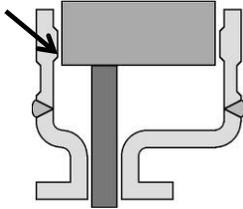
CRDM Housing



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CRDM Housing

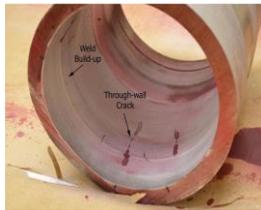
- Rack and Pinion CRDM Mechanism
- Only two plants built this way
- 316 stainless
- Crack at internal (non pressure boundary) weld



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CRDM Housing

- 9 Cracks
 - 1 through wall
 - All axial
 - In two groups
 - 1 rub mark



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CRDM Housing

- Resolution
 - Housing Replaced
 - 8 others inspected
 - No defects
 - NRC reviewing Plant root cause evaluation
 - Additional inspections planned in 2013 and in the future

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