

# NRC Research Programs on PWSCC Mitigation



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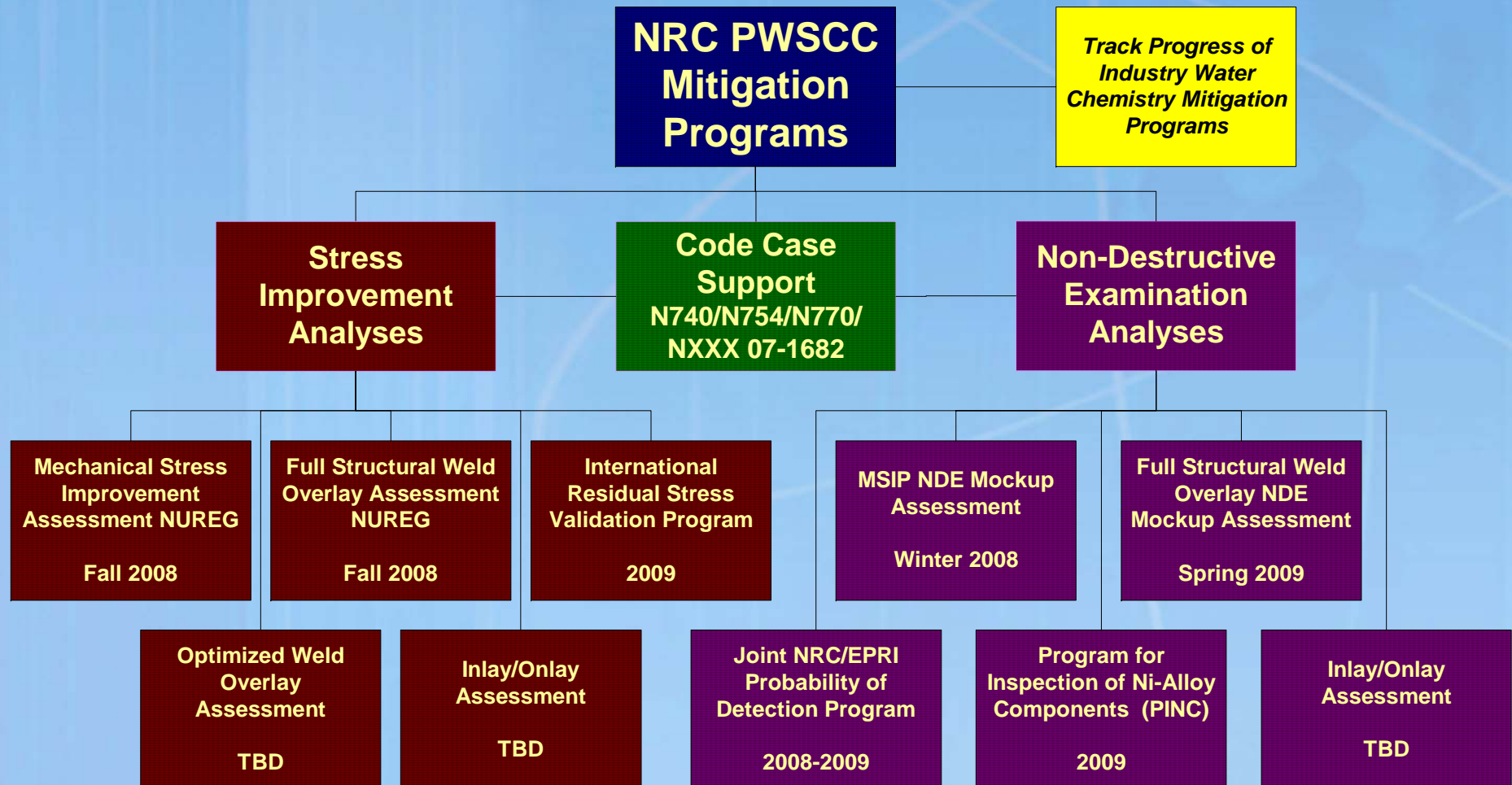
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# PWSCC Mitigation Research Programs

- Purpose:
  - To support NRR in considering appropriate regulatory requirements to address PWSCC of all susceptible primary pressure boundary.
- Overall Goals:
  - Assess industry proposed PWSCC mitigation processes for susceptible Ni-base alloy primary pressure boundary components.
  - Develop strategies for managing PWSCC in Leak-Before-Break systems to ensure the probability of pipe rupture remains extremely low.

# PWSCC in Ni-based Alloys: Research Programs



# NRC Staff/Industry Meeting on PWSCC Mitigation Activities



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- RES program on LBB initiated based on NRR request
- Broad purpose of research
  - Update regulatory criteria given PWSCC considered active degradation mechanism in LBB system butt welds under SRP 3.6.3
- NRC following a short term and long term strategy for updating regulatory criteria



- NRC staff needs to update the technical basis for past LBB approvals to reflect PWSCC and ongoing PWSCC inspection/mitigation activities
- RES is developing assessments for each of mitigation/management method industry is using to address PWSCC
  - Overlays
  - Mechanical stress improvement
  - Inlays/cladding
  - Inspection
- RES tracking progress of industry efforts on modifying environment



## Short Term Strategy (Cont'd)

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- NRC staff to use the assessment reports
  - to independently confirm the effectiveness of various mitigation methods
  - to independently evaluate questions raised by staff, for example at ASME Code meetings
  - to support evaluation of relief requests and ASME Code Case developments
  - to support updating this technical basis for past LBB approvals
  - to support development of models to be used in long term study – probabilistic analyses
  - staff does not plan to use the assessment reports to evaluate SRP 3.6.3 criteria on stress corrosion cracking



- Develop a probabilistic approach to ensuring that GDC-4 is satisfied
  - Approach is termed, “extremely low probability of rupture” or “XLPR”
- Over the long term XLPR will supersede LBB approach in SRP 3.6.3
- Not clear what the probabilistic analyses will yield since no such analyses have been performed
- Implementation of XLPR approach may necessitate regulatory action
  - Potential for regulatory action will be discussed as XLPR approach matures