xLPR Models Task Group Status Update

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Project Integration Board Meeting

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Rockville, MD

Key Actions from June Meeting

MILESTONE	TARGET COMPLETION DATE
Set up task group and subgroups	May 2009
Develop database	June 2009
Populate database	Aug. 2009
Develop model assessment protocol	Aug. 2009
Assess models relative to protocol	Sept. 2009
Consensus selection of models for PS	Oct. 2009
Identify gaps/shortcomings	Dec. 2009
Develop Technical Support Document	Dec. 2010

Activities Underway

- Task Sub-groups set up
- Database & Questionnaire Format Developed
- Model Reviews and Database Population Underway
  - PWSCC Initiation Models
  - Crack Growth Models
  - Stability Models
  - Leak-Rate Models
  - Inspection
  - Mitigation Models
  - Additional Models
    - K-solutions, Coalescence criteria, SC – TWC transition models
    - COA (separate from leak-rate)
    - Fabrication Flaws

Task Group Interface Action Items

- Plant properties
  - Years in operation
  - Years to EOL, EOLE
- Pipe and weld geometry
- Weld residual stresses
- Static Loads
  - Bending, axial, torque
    - Pressure
    - Dead weight
  - Heat-up & cool-down
  - Thermal expansion / stratification
  - Vibration
- Transient loads
  - Earthquakes (postulated & actual)
  - Vibrations
- Crack morphology
  - Roughness, deviations & turns
- Material properties
  - σ/ε curves vs. temp
  - E, α, n
  - J-R curves vs. temp.
  - Alloy/heat chemistry
- Water chemistry
  - Conductivity, oxygen, sulfur
- Temperature
- NDE Inspection
  - Initial flaw distribution
    - Location, orientation, size
  - Probability of detection curves
    - Piecewise linear, Weibull
- Leak rate detection capability
- Weld repair options
  - Replace w/ similar material
  - Replace w/ non-susceptible material
  - Overlay, inlay
  - Mechanical stress improvement

TG Interface Items/Issues

- Define process for cross-communication between task groups
  - Via share site?
  - Via Group leaders?
- Define distinction between Inputs and Models Task Group responsibilities (model parameters such as material constants)
  - Inputs: Everything Plant?
  - Models: Everything test facility?
- How to keep track of “parking lot” items for full project

Participation and Support

- Energy, enthusiasm and morale are excellent
- Models reviews are progressing, but about 1 month behind schedule