

Program for the Inspection of Nickel-Alloy Components (PINC) – 10th Meeting



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UNITED STATES NUCLEAR REGULATORY COMMISSION
Protecting People and the Environment

October 3-5, 2007
VTT Technical Research Centre, Espoo, Finland

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Objectives for PINC Cooperative Research Project

- Document the range of locations and crack morphologies associated with PWSCC
- Correlate observed NDE responses with PWSCC
- Fabricate / obtain representative NDE mock-ups with flaws to simulate the NDE responses of tight PWSCC cracks
- Identify and quantitatively assess NDE methods for accurately detecting, sizing and characterizing tight cracks such as PWSCC
- Incorporate findings from other PWSCC research programs
- Reports are intended to be public, but proprietary information will be protected



Project Membership

- US Nuclear Regulatory Commission (NRC)
 - Pacific Northwest National Laboratory (PNNL)
- Swedish Nuclear Regulator (SKI)
- Japan Nuclear Energy Safety Organization (JNES)
 - Japan Power Engineering and Inspection Corporation (JAPEIC)
- US Electric Power Research Institute (EPRI)
- Japanese PWR Industry Group (represented by Kansai Electric Power Co.)
- Tohoku University
- VTT Technical Research Centre of Finland *and* Helsinki University
- Korean Institute of Nuclear Safety (KINS) *and* Korea Atomic Energy Research Institute (KAERI), with industry partners

- Task 1 – Morphology Atlas (TG-Atlas)
 - Compile existing work on crack morphology of PWSCC
 - Correlate morphology with NDE data, when available
 - Develop an electronic Atlas (database) of NDE and metallography information
 - Perform new NDE, fractography, metallography
- Task 2 – NDE Technology Assessment (TG-NDE)
 - Conduct round robin tests (RRTs) of NDE techniques on PWSCC and simulated cracks
 - Consider relevant materials, geometries
 - Assess NDE techniques to detect and size cracks
 - Assess techniques to manufacture test blocks
 - Integrate findings into Task 1 Atlas
 - Analyze findings for regulatory application, process qualification



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Data Analysis Group

- Develop plan for analysis of TG-NDE data
- Oversee destructive testing of mock-ups
- Finalize true state data
- Conduct full data analysis
- Contribute to PINC/PNNL project reports



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Summary

- PINC project offers one of the first opportunities to capture PWSCC morphology and the corresponding NDE responses
- In addition to quantifying NDE performance, a goal is to understand how relative performance of NDE techniques relates to morphology
- The PINC Atlas will be a tool to assist in distinguishing PWSCC from other degradation, geometry responses, fabrication conditions, etc.

Meeting Agenda

October 3rd

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| Opening of Meeting, Joint Session of Task Groups | 9:00 |
| Lunch | 12:00 |
| Adjourn for the Day | 17:00 |

October 4th

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| Task Group Meetings | 8:30 |
| Lunch | 12:00 |
| Laboratory Tour at Helsinki University of Technology, TrueFlaw, and VTT | 13:00 |
| Adjourn for the Day (bus returns to hotel) | 17:30 |
| Dinner in Helsinki, hosted by VTT | 19:00 |

October 5th

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| Data Analysis Group Meeting [closed] | 8:30 |
| Steering Committee Meeting [closed] | 9:30 |
| Reports from Task Groups and DAG | 9:45 |
| Discussion – RRT Planning, Reports | 11:00 |
| Schedule for Future PINC Meetings | 12:00 |
| Adjourn | 12:30 |