

NRC-Industry 2011 Meeting on Alloy 690 Research

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U.S. NRC

June 6-7, 2011
Rockville, MD

Welcome

- Public Meeting
- Introductions
- Motivation
- Purpose of the Meeting
- Expected Outcomes
- Process
- Meeting Agenda

Motivation

- PWSCC of Alloy 600/182/82 continues to be an issue in operating plants
 - Inspection requirements
 - Worker exposure
 - Component repair and replacement
- Current and future use of Alloy 690/152/52
 - PWSCC mitigation
 - Replacement components
 - New reactors
- Gaps in existing knowledge for Alloy 690/152/52
 - Factors that affect PWSCC susceptibility
 - Material processing
 - Fabrication and welding
 - Development of new weld metals
- Component life predictions
- Evaluation of mitigation processes

Purpose

- Mutual understanding of Industry and NRC needs
- Comparison of results from multiple laboratories
 - Crack growth rates
 - Posttest analyses
 - Materials characterization
- Effective coordination of research to address knowledge gaps on PWSCC of Alloy 690/52/152
- Use accumulated knowledge to address challenges to PWSCC testing of Alloy 690/52/152

Outcomes

- Progress towards filling data gaps
- PWSCC susceptibility of Alloys 690/152/52
 - Test material characterization
 - Alloy 690 processing, cold work, and microstructure
 - Welds, weld defects, and HAZs
 - Environmental effects
- Weld metal development
- Prioritize future research
 - Identification of new materials needed
 - Outstanding data and updated test plans

Process

- Review of results from recently completed and ongoing Alloy 690/52/152 PWSCC testing and characterization activities sponsored by NRC, Industry, and International Organizations
- Updated on Alloy 690 weld metal development
- Discussion of knowledge gaps, recent results, and prioritization of future testing and characterization needs

Meeting Agenda

NRC-Industry 2011 Meeting on Alloy 690 Research
Monday, June 6, 2011: 9:00 am – 5:00 pm

Time	Topic Description	
9:00 am – 9:30 am	Welcome and Introductions NRC Purpose, Outcomes, Process Statement Review of Meeting <ul style="list-style-type: none"> - Agenda - Objectives - Expected Outcomes - Motivation for R&D 	<i>Darrell Dunn - NRC</i>
9:30 am – 9:45 am	Research Collaboration Status	<i>Al Ahluwalia - EPRI</i>
9:45 am – 10:15 am	Regulator's Perspectives	<i>Jay Collins/NRR Staff - NRC</i>
10:15 am – 10:30 am	Review of Knowledge Gaps	<i>Darrell Dunn - NRC</i>
10:30 am – 10:45 am	Break	<i>All</i>
10:45 am – 12:00 am	Characterization of Alloys 690 to 52-type Welds, Weld Interfaces, and Base Metal Microstructures	<i>Martin Morra - GE</i>
12:00 pm – 1:15 pm	Lunch	<i>All</i>

Meeting Agenda

NRC-Industry 2011 Meeting on Alloy 690 Research
Monday, June 6, 2011: 9:00 am – 5:00 pm

1:15 pm – 2:00 pm	Microstructural Characterization of Alloy 690	<i>Steve Bruemmer - PNNL</i>
2:00 pm – 2:45 pm	Weldability Issues for Inlay, Onlay and Overlay	<i>Steve McCracken - EPRI</i>
2:45 pm – 3:15 pm	Thermal embrittlement of nickel and iron-based alloys in nuclear power systems	<i>Erich Wimmer Materials Design, Inc</i>
3:15 pm – 3:30 pm	Break	
3:30 pm – 4:00 pm	PWSCC Initiation Testing	<i>T.G. Lian - EPRI</i>
4:00 pm – 4:45 pm	Emerging Results on SCC of Alloy 690 Base Metal and HAZ	<i>Peter Andresen - GE</i>
4:45 pm – 5:00 pm	Summary, Discussion, and Action Items	<i>Darrell Dunn - NRC</i>
5:00 pm	Adjourn until Tuesday at 8 am	<i>All</i>

Meeting Agenda

NRC-Industry 2011 Meeting on Alloy 690 Research
Tuesday, June 7, 2011: 8:00 am – 3:30 pm

Time	Topic Description	
8:00 am – 8:30 am	PNNL Crack Growth Rate Testing on Alloy 690	<i>Steve Bruemmer - PNNL</i>
8:30 am – 9:00 am	Emerging Results on SCC of Alloy 52 / 152 / 152i Weld Metals	<i>Peter Andresen - GE</i>
9:00 am – 9:30 am	Summary of testing at SERCO, <u>Ciemat</u> , and MHI	<i>Peter Andresen - GE</i>
9:30 am – 10:15 am	SCC CGR tests on Alloys 690/52/152 at ANL	<i>Bogdan Alexandreanu - ANL</i>
10:15 am – 10:30 am	Break	<i>All</i>
10:30 <u>am</u> – 11 :00 am	PNNL Crack-Growth-Rate Testing on Alloy 152 and 52M Weld Metals	<i>Steve Bruemmer - PNNL</i>
11:00 <u>am</u> – 11:30 am	Chemical Mitigation of PWSCC	<i>Chuck Marks – DEI</i>
11:30- am – 12:00 pm	xLPR A Probabilistic Approach to LBB	<i>Dave Rudland - NRC</i>
12 :00 pm – 1:15 pm	Lunch	<i>All</i>

Meeting Agenda

NRC-Industry 2011 Meeting on Alloy 690 Research
Tuesday, June 7, 2011: 8:00 am – 3:30 pm

1 :15 pm – 2:00 pm	EAC and hot cracking susceptibility of nickel-base alloy weld metals	<i>Hannu Hanninen Aalto University</i>
2:00 pm – 2:45 pm	CGR working group report	<i>Peter Andresen - GE</i>
2 :45 pm – 3:15 pm	Summary, Discussion, and Action Items	<i>Darrell Dunn - NRC</i>
3:15 pm – 3:30 pm	Closing comments and December EPRI meeting	<i>Al Ahluwalia - EPRI</i>
3:30 pm	Adjourn Meeting	