



RIC 2001

Steam Generator Issues

Session TH2



Lessons Learned From Recent Industry Events

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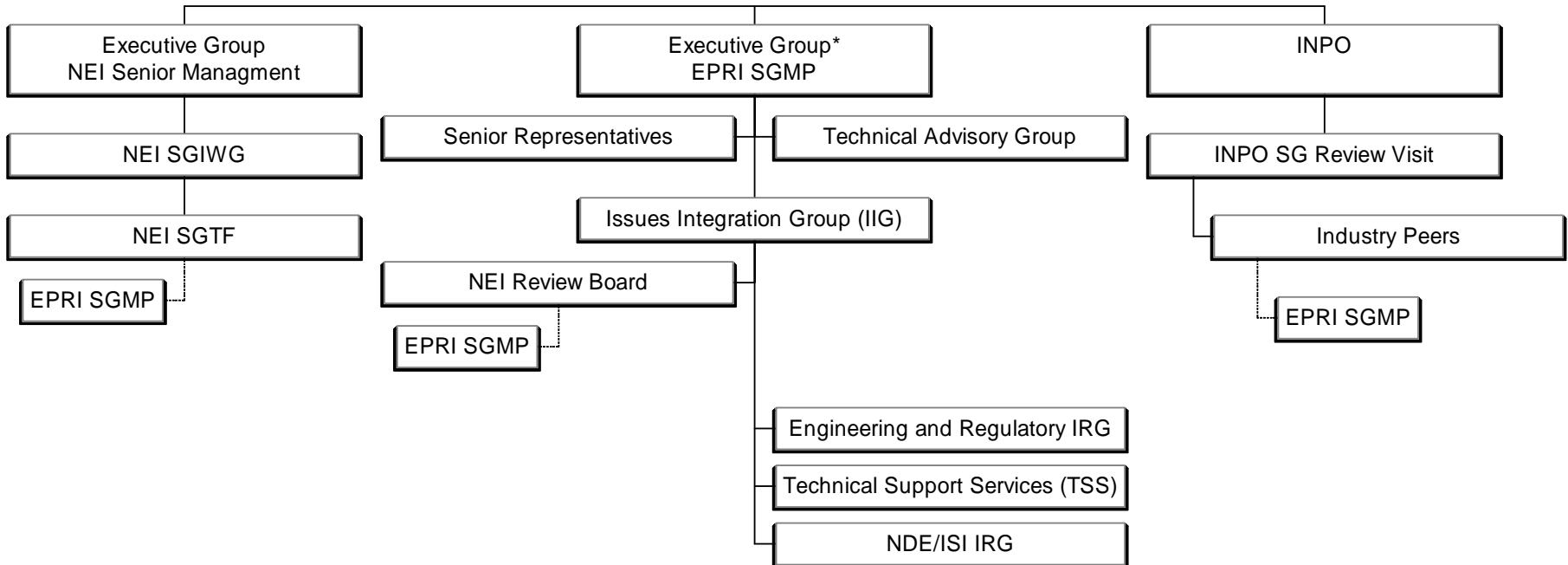
Topics

- Industry Organization
 - Integrated Response Organization
- Recent Industry Events
 - Indian Point 2
 - Burst Test Anomaly
 - Generic Licensing Package/SG Action Plan
- Lessons Learned



Industry Steam Generator Organizations

Industry Steam Generator Organizations



* Executive Group oversees both SGMP and MRP



Current Role of EPRI SGMP

- SGMP via IRGs/IIG is designed to respond to industry issues
 - Plant experience, NRC, NEI, INPO
- TSS maintains EPRI role in long term R&D
- Integral Role in NEI 97-06, Generic Licensing Package
 - Provides technical support
 - EPRI SGMP has developed SG program guidance documents
 - PWR Steam Generator Examination Guidelines
 - PWR Primary to Secondary Leak Guidelines
 - In Situ Pressure Test Guidelines
 - Steam Generator Integrity Assessment Guidelines
 - PWR Primary Water Chemistry Guidelines
 - PWR Secondary Water Chemistry Guidelines



Recent Industry Events

- Indian Point 2 Tube Failure (2/15/2000)
 - Leakage event led to plant shutdown
 - Tube crack in small radius U-bend
 - Significant NRC/Public Interaction
 - NRC Evaluation
 - Technical Evaluation Report (TER) - 10/11/2000
 - Lessons Learned Report - 11/01/2000



Recent Industry Events

- Tube Burst Anomaly
 - Testing conducted by licensee indicated potential impact of pressurization rate
 - Issue could affect testing and evaluation of degraded steam generator tubes
- Generic Licensing Package/SG Action Plan
 - Development of licensing framework to ensure steam generator tube integrity
 - Response to NRC RIS 2000-22 and Lessons Learned Report



Industry Response

- Objective
 - Evaluate industry events and disseminate information/guidance
- Tools
 - Meetings/Workshops
 - Direct Industry Notification
 - Industry Websites
 - Directed Research and Development

Response to IP2 Event



- INPO/SGMP Team dispatched at plant's request
 - NDE and SG Integrity Engineering Expertise
 - Team provided input to IP2 and Industry Feedback
- Technical Exchange
 - SGMP TAG Meeting (3)
 - NDE Workshop
 - Session dedicated to U-bends
- Directed Guidance
 - Lessons Learned Letter issued 9/29/2000
- Directed Research
 - Qualification of High Frequency Plus Point Probe



Lessons Learned Letter



- Key areas addressed
 - Degradation Assessment
 - Data Quality for SG Inspections
 - Probability of Detection (POD)
 - In Situ Pressure Testing of Tubes
 - Risk Analysis
 - SG Program Ownership and Implementation



Tube Burst Anomaly

■ Background

- Effect identified by licensee and reported to Industry/NRC
- Different test results for “apparent” similar flaws based on pressurization rate
 - Slower rates yielded lower test pressures
 - Rates less than industry guidance
- Issue could impact in situ testing and integrity assessment



Industry Actions

- Directed Guidance
 - Issued Interim Guidance - 10/13/2000
 - Guidance supplemented EPRI In Situ Pressure Test Guideline
 - Provided guidance to ensure that pressurization rate is not an issue in demonstrating in SG tube integrity
 - Provided additional lessons learned data regarding flaw evaluation and test leakage
- Directed Research
 - EPRI SGMP embarked on additional research
 - Data search
 - Metallography
 - Burst and Tensile test



Generic Licensing Package/SG Action Plan

- Generic Licensing Package
 - Industry has developed licensing framework to improve tube integrity programs
 - NEI 97-06 and support guidance
 - Proposed Technical Specification
- SG Action Plan
 - Industry developing response/guidance to issues identified in RIS 2000-22 and IP2 Lessons Learned Report



Conclusion

- Industry recognizes need to be responsive to steam generator events
 - Improves safety and reliability of plants
- Industry organized to disseminate information
 - Technical support provided by EPRI SGMP
 - Vehicle to request interpretation of guidance
 - NEI Review Board
 - Program consistency enhanced by INPO SG Review Visit Program