



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**  
WASHINGTON, D.C. 20555-0001

**MEMORANDUM TO:** William H. Bateman, Chief  
Materials and Chemical Engineering Branch  
Division of Engineering

**FROM:** Edmund J. Sullivan, Chief  
NDE & Metallurgy Section  
Materials and Chemical Engineering Branch  
Division of Engineering

**SUBJECT:** SUMMARY OF DECEMBER 20, 2000 MEETING WITH NUCLEAR  
POWER INDUSTRY REPRESENTATIVES AND OTHER  
STAKEHOLDERS TO DISCUSS STEAM GENERATOR ISSUES

On December 20, 2000 the NRC staff met with representatives of the Nuclear Energy Institute (NEI), the Electric Power Research Institute (EPRI), nuclear power utilities and other stakeholders to discuss steam generator issues. Meeting attendees are identified in Attachment 1. Attachments 2 and 3 contain the copies of view graphs and handouts presented during the meeting by NRC staff and industry representatives, respectively.

The NRC staff opened the meeting and explained NRC's activities over the past year which included the February 15, 2000 Indian Point Unit 2 (IP2) steam generator tube failure Lessons Learned Report, the staff response to the Office of Inspector General Report on the IP2 event and the NRC Steam Generator Action Plan. The staff then presented a matrix which illustrated potential impacts of the recommendations of the Indian Point Unit 2 Lessons Learned Report on the NEI 97-06, "Steam Generator Program Guidelines" initiatives. However, the staff indicated the shortcomings pointed out by the lessons learned recommendations need to be addressed regardless of the regulatory framework. Therefore, proceeding with the proposed change in the framework contained in NEI 97-06 should not be delayed pending completion of actions to respond to the recommendations. The staff stated NEI 97-06 focuses on ensuring tube integrity and reflects a potentially significant industry improvement over the current regulatory environment. Nevertheless, it would be unrealistic to conclude that it will eliminate steam generator tube leaks or ruptures. The staff's safety evaluation of NEI 97-06 will need to acknowledge both of these points.

The staff indicated that there are a number of technical differences that exist between the industry and the staff and technical differences will continue to exist under the proposed NEI 97-06 regulatory framework. The staff recognizes a need for a protocol between NRC and the industry to deal with these issues and this should include periodic meetings between NRC staff and industry representatives. The staff's view is that the protocol should contain a list and description of issues that have to be acted on over time and a method of tracking actions. The staff stated that it would be helpful for the safety evaluation of NEI 97-06 to be able to reference the protocol and requested that industry develop a proposal for it.

**CONTACT:** R. Rothman EMEB/DE  
415-3306

The staff noted that although it deferred the review of NEI 97-06 due to activities associated with the IP2 tube failure, it is aware of one significant concern it has with the NEI 97-06 generic change package of February 4, 2000. This concern is with the referenced performance criteria only in the administrative section of the technical specifications. The change from earlier drafts affects the link between the performance criteria and steam generator operability.

An NEI representative pointed out that NEI has a data base to track steam generator issues. He discussed the industry steam generator lessons learned and a revision to the NEI 97-06 generic license change package that will be submitted. This discussion included a list of changes that will be made to the EPRI steam generator program guidelines in response to the lessons learned. The NEI representative also noted some cases, in contrast with the NRC IP2 lessons learned recommendations, where the industry believes guideline changes are unnecessary. The subject of guideline changes as related to the NRC IP2 lessons learned recommendations will be the subject of a future NRC/NEI working level meeting.

There will be an NRC/NEI senior management meeting on steam generator issues February 16, 2001. NEI indicated that, at that time, the industry would like to get a clearer understanding of NRC plans for the review of the license change package and what the schedule will be from Office of Nuclear Reactor Regulation management.

Attachments: As stated

cc: J. Riley, NEI

**Attendance List 12/20/2000 NRC-NEI Meeting**

<b>Name (please print)</b>	<b>Organization</b>	<b>Phone Number</b>	<b>E-mail</b>
R. Rothman	NRC/NRR	301 415 3306	rlr@nrc.gov
Helen Cothron	TVA	423 751 7658	mhcothron@tva.gov
Bart Fu	NRC/NRR	301 415 2467	zbf@nrc.gov
Jim Albert	B&W Canada	304 535 1948	jralbert@pgg.mcdemo.ca
John Tsao	NRC/NRR	301 415 2702	jct@nrc.gov
Altheia Wyche	SEARCH licensing/Bechtel	301 228 6401	awyche@bechtel.com
Yuri Orechwa	NRC/NRR	301 415 1057	yxo@nrc.gov
Steve Long	NRC/NRR/DSSA/SPSB	301 415 1077	sml@nrc.gov
Gary Henry	EPRI	704 547 6132	ghenry@epri.com
Mohamad Behraves	EPRI	650 855 2388	mbehrave@epri.com
Deann Raleigh	LIS	301 258 2551	craleigh@nus.com
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Michael P. Short	Southern Calif. Edison	949 368 6244	shortmp@songs.sce.com
Rick Mullins	Southern Co.	205 992 5502	remullin@southernco.com
Mati Merilo	EPRI	650 855 2104	mmerilo@epri.com
Jenny Weil	McGraw-Hill	202 383 2161	jenny_weil@mgh.com
Richard P. Pearson	XCEL Energy	651 388 1121 x5598	richardpearson@xcelenergy.com
David Goetcheus	TVA	423 751 7652	dfgoetcheus@tva.gov
Kevin Sweeney	Arizona Public Service	623 393 5049	ksweeney@apsc.com
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Bob Tjader	NRR/TSB	301 415 1187	trt@nrc.gov
Bill Bateman	USNRC	301 415 2795	whb@nrc.gov
Edmund Sullivan	USNRC/EMCB	301 415 2796	ejs@nrc.gov
Cheryl B. Khan	USNRC/EMCB	301 4152751	cdb@nrc.gov
Patricia L. Campbell	Winston & Strawn	202 371 5828	pcampbel@winston.com

**Attendance List 12/20/2000 NRC-NEI Meeting**

<b>Name (please print)</b>	<b>Organization</b>	<b>Phone Number</b>	<b>E-mail</b>
Dennis Zannoni	N. J. DEP	609 984 7440	dzannoni@dep.state.nj.us
Mitch Singer	NEI	202 739 8009	mbs@nei.org
Paul Gunter	NIRS	202 328 0002	pgunter@nirs.org
Stephanie Coffin	NRC	301 415 2778	smc1@nrc.gov

**Nuclear Energy Institute - Nuclear Regulatory  
Commission Working Meeting On Steam Generator  
Issues With The Industry And Stakeholders**

**December 20, 2000**

# MEETING AGENDA

1. Recent NRC activities related to Indian Point Unit 2 event (NRC)
2. NRC view of implications of recent steam generator activities on NEI 97-06 (NRC)
3. Recent industry activities including revised NEI 97-06 generic technical specification change package(NEI)
4. NEI view of implications of recent steam generator activities on NEI 97-06 (NEI)
5. Plans to address outstanding issues (NRC and NEI)
6. Plans for a workshop on steam generator issues (NRC and NEI)
7. Plans for a Senior Management Meeting (NRC and NEI)
8. Comments from other stakeholders

Recent NRC Activities Related to Indian Point Unit 2 Event

IP 2 SG Tube Failure Lessons Learned Report

Office of the Inspector General Report

Steam Generator Action Plan

# Historical Overview

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- 2/15/00 - IP2 Tube Failure Event
- 2/28/00 - NRR request to RES for independent review
- 3/16/00 - RES response to NRR
- 5/24/00 - Task Group Charter issued
- 8/29/00 - OIG Report issued
- 8/30/00 - Chairman's request for staff review of OIG Report
- 10/23/00 - Lessons-Learned Report issued
- 11/3/00 - Staff Review of OIG Report issued
- 11/16/00 - SG Action Plan issued

# **Lessons-Learned Task Group**

- Assembled in accordance with Charter dated May 24, 2000
- Objective - evaluate staff's technical and regulatory processes related to assuring SG tube integrity in order to identify and recommend areas for improvement applicable to the NRC and/or the industry
- Multi-disciplined Task Group consisting of staff from NRR, RES, Region - support from OGC and others as needed

# **Scope of Task Group Review**

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- Review included technical and regulatory process issues related to assuring SG tube integrity
- Conclusions & Recommendations were developed based on reviews of documentation and discussions with NRC staff, NRC SG expert consultants, nuclear industry representatives involved in SG programs, and Con Ed staff

# **Scope of Task Group Review (Cont.)**

- Documents reviewed included:
  - ▶ IP2 plant-specific SG documents
  - ▶ NRC generic SG-related documents
  - ▶ Nuclear industry generic SG-related documents
  - ▶ RES Independent Review dated 3/16/00
  - ▶ OIG Report dated 8/29/00

# **Scope of Task Group Review (Cont.)**

- **Scope of review did not include:**
  - ▶ IP2 SG issues being addressed by other regulatory processes
  - ▶ Event follow-up issues not specifically related to SG tube integrity
  - ▶ Evaluation of Con Ed performance relative to regulatory requirements

## **Scope of Task Group Review (Cont.)**

- Charter directed Task Group to review staff SE associated with IP2 restart following tube failure. This activity was terminated when Con Ed decided to replace their SGs before restart.
- Charter states Task Group not expected to identify the processes for resolving areas of potential weakness.

# **Task Group Interfaces with Stakeholders**

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- **NRC staff and management from NRR, RES, and Region**
- **NRC SG expert consultants**
- **Con Ed**
- **NEI/EPRI**

# **Recommendations**

The major areas addressed in the Task Group recommendations include the following:

- Con Ed must correct the deficiencies in its SG tube integrity program.
- Industry should improve the EPRI guidelines.
- Industry should improve the SG TSSs.
- Industry should improve the NEI 97-06 initiative.

## **Recommendations (cont.)**

- NRC should improve its SG oversight and inspection process.
- NRC should improve its licensing review process.
- NRC should assign a high priority to its review of the NEI initiative and the associated EPRI guidelines.
- NRC should issue a generic communication regarding SG tube integrity program guidance.
- NRC should improve risk communication to the public.

# OIG Report

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- **OIG issued its event inquiry (report) on 8/29/00 because of concerns from Congress and public about the IP2 event.**
- **OIG report addresses SG and non-SG related issues.**
- **Chairman's memo dated 8/30/00 directed staff to perform review and analysis of issues in OIG report. Also requested staff to provide recommendations for improving NRC processes.**

## **OIG Report (cont.)**

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- Staff review of OIG Report (SG and non-SG related issues) is provided in memo dated 11/3/00 from EDO to the Commission.
- Task Group considered SG-related issues from OIG report in the lessons-learned report. A summary of the Task Group's evaluation of the OIG Report findings is included in Attachment 1 to this presentation.

# **SG Action Plan**

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- **SG Action Plan was issued on 11/16/00.**  
The purpose of the action plan is to:
  - ▶ **Direct and monitor the NRC's efforts in the SG tube integrity area.**
  - ▶ **Ensure that the associated issues are appropriately tracked and dispositioned.**
  - ▶ **Ensure the NRC's efforts result in an integrated SG regulatory framework (e.g., licensing, inspection, research) which is effective and efficient.**

## **SG Action Plan (cont.)**

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- The action plan consolidates numerous activities related to SGs including:
  - ▶ Evaluation and implementation of recommendations from Lessons-Learned report;
  - ▶ Evaluation and implementation of recommendations from staff review of OIG report;
  - ▶ NRC review of NEI 97-06;
  - ▶ Resolution of GSI-163; and
  - ▶ Resolution of SG DPO.

## **SG Action Plan (cont.)**

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- The action plan also includes non-SG related issues that arose out recent SG activities (e.g., EP issues from OIG report).
- The action plan does not address plant-specific reviews or industry proposed modifications to GL 95-05 (voltage-based tube repair criteria).

## **SG Action Plan (cont.)**

- **Completion of each action plan milestone will be documented via memo from lead division to associate directors in NRR.**
- **Resolution of issues will be coordinated with internal and external stakeholders.**
- **Status of action plan milestones will be updated on quarterly basis and published in the NRR Director's Quarterly Status Report.**
- **Overall management of the plan is the responsibility of DLPM.**

**NRC View of Implications of Recent Steam Generator  
Activities on NEI 97-06**

**Matrix of Potential Impacts of IP2 Lessons Learned**

**Steam Generator Program in Technical Specifications**

**Impact On NEI 97-06 Initiative**

# Matrix of Potential Impacts of IP 2 Lessons Learned

Topics	Issues	Description	NEI Coord	NEI 97-06	NEI Chng Pkg	Industry/ EPR GLns	Lic'see Action	NRC Act'n	NRC Over- Site	NRR Proced	NRC Inspect Proced
Indian Point 2											
	LL 1	Correct deficiencies					X				
Assessment of Degradation Mechanisms											
	RIS 1	Consideration of relevant operating experience		X		X					
	RIS 2	Assess root cause for all degradation mechanism		X		X					
	LL 2e	Inspection for hourglassing and its implications				X					
	LL 2f	Definition of significant hourglassing				X			X		
	LL 2k	Prudent measures upon finding of new deg mech		X		X					
	LL 2l	Tube integrity implications of new mechanisms		X		X					
NDE Data Quality											
	RIS 3	Need for data quality and accept criteria				X					
	LL 2a										
	LL 2b	Data quality for new tubing				X					

Topics	Issues	Description	NEI Coord	NEI 97-06	NEI Chng Pkg	Industry/EPRI GLns	Lic'see Action	NRC Act'n	NRC Over-Site	NRR Proced	NRC Inspect Proced
LL 2c		Use of noise minimization techniques				X					
<b>NDE Qualification</b>											
	RIS 4	Use realistic flaws				X					
	RIS 5	Site-specific qualification				X					
	LL 2d										
	LL 2g										
<b>NDE Data Analysis</b>											
	LL 2n	Computer data analysis				X					
<b>Pressure Testing</b>											
	RIS 6	Insitu test screening criteria				X					
	LL 2h										
	LL 2i										
	RIS 7	Assessment of test results				X					
	RIS 8	Pressurization rate				X					
<b>Operational Assessment</b>											
	RIS 9	Fractional flaw methodology				X					
	RIS 10	Benchmarking				X					
	LL 2m										
	LL 2m	Predictive models for PWSCC				X					

Topics	Issues	Description	NEI Coord	NEI 97-06	NEI Chng Pkg	Industry/EPRI GLns	Lic'see Action	NRC Act'n	NRC Over-Site	NRR Proced	NRC Inspect Proced
RIS 5 LL 2j	POD and sizing accuracy					X					
Operational Assessment (Continued)											
LL 2j	Growth rates					X					
LL 2l	New degradation mechan					X					
Technical Specifications											
other	Surveillance requirement in SR 3.4.13.2				X						
LL 3a	Update to reflect current knowledge		X		X	X					
LL 3b	Adequacy of oper leakage limits		X		X	X					
NEI 97-06 Initiative											
LL 4a	Contractor oversight			X		X					
LL 4b	Feedback - Application by licensees of IP2 LL		X								
LL 4c	Feedback - planned changes to NEI 97-06 initiative		X	X	X	X					
LL 7	Expedite review of NEI 97-06 and EPRI guidelines								X		





## Steam Generator Program in Technical Specification

### Steam Generator Technical Specifications

Are currently very prescriptive

Have historically been a Section 3 Specification

Requirements are moved to program in the Administrative Controls Section in the STS

Require Steam Generator Operability

Operability = "... capable of performing its specified (safety) function(s)."

## Steam Generator Program in Technical Specifications

Provides the flexibility of allowing easy adoption of new tube surveillance techniques

Retains Operability Requirements in Technical Specifications

Program is invoked via Surveillance Requirements (requirements are not relaxed)

## Steam Generator Program

(TS 5.5.9.1) “A steam generator program shall be established and implemented to ensure that steam generator tube integrity is maintained. Steam generator tube integrity is maintained by meeting the performance criteria as defined in the steam generator program.”

Performance Criteria includes: structural criterion, accident induced leak criterion, and operational leakage criterion.

## Surveillance Requirement

Surveillance Requirement (SR), appearing in the “RCS Operational Leakage” specification:

Proposed and Acceptable, SR 3.4.13.2: “Verify steam generator tube integrity is in accordance with the performance criteria described in the Steam Generator Program.”

Associated Bases to SR 3.4.13.2: “This SR provides the means necessary to determine SG OPERABILITY in an operational MODE. The requirement to demonstrate SG tube integrity in accordance with the Steam Generator Program emphasizes the importance of SG tube integrity, even though this surveillance cannot be performed at normal operating conditions.”

## Latest SR 3.4.13.2 Proposal

Proposed and Unacceptable, SR 3.4.13.2: “Verify primary to secondary leakage is in accordance with the Operational Leakage performance criteria described in the Steam Generator Program.”

Associated Bases: “This SR requires the determination of SG OPERABILITY in an operational MODE. The requirement to demonstrate SG OPERABILITY includes verification that the Operational Leakage performance criterion in the steam generator program is satisfied. This surveillance requirement emphasizes the importance of SG tube integrity and provides reasonable assurance of tube integrity under operating conditions. The 150 gallons per day limit is measured at standard temperature and pressure.”

Conclusions: SR 3.4.13.2 words need to be revised per prior NRC/NEI understanding

## Impact On NEI 97-06 Initiative

- NRC staff believes that the “Action Plan Issues” are not directly relevant to staff’s disposition of the NEI generic change package.
  - In general, the subject issues exist irrespective of the governing regulatory framework (i.e., existing framework vs proposed framework).
  - The subject issues are relevant to detailed industry guidelines which the staff is not planning to formally review or to endorse.

## Impact On NEI 97-06 Initiative (Continued)

- The Action Plan will have “indirect” effect on NEI generic change package in that it provides context for the change package.
  - The change package will constitute a significant regulatory improvement over the existing approach which is prescriptive and outdated.
  - However, adoption and implementation of NEI generic change package is not a panacea for issues related to maintaining tube integrity.
  - Technical issues exist (e.g., Action Plan Issues) and will continue to exist and arise in the future.
  - The effectiveness of these guidelines in ensuring tube integrity will be improved as these issues are resolved.

## Impact On NEI 97-06 Initiative (Continued)

- The staff's SE will need to acknowledge these points and will need to:
  - Explain the status of each of the action plan issues.
  - Explain how the performance based framework will address future issues.
- An NRC/industry protocol is needed to identify and track resolution of issues. This protocol should include periodic meetings.

## Plans for Workshop on Steam Generator Issues

Duration: One and one-half days

Location: Hotel in Baltimore Inner Harbor

Date: Week of February 26<sup>th</sup>, 2001

Presenters: NRC, Industry, Possibly Public Stakeholders

Format: Presentations followed by facilitated discussions

## SG WORKSHOP TOPICS

### SG Inspection Technical Issues (Session Chairs: 1 NRC + 1 Industry)

(NRC presentations: 45 min. EMCB staff; 45 min. RES/DET/MEB staff)

- Eddy current data quality; noise issues
- POD issues; sizing techniques - NRC perspective and industry actions
- NRC SG mockup round robin results; future plans for mockup

### SG Programmatic Issues (Session Chairs: 1 NRC + 1 Industry)

(NRC presentations: 90 min. EMCB staff?)

- NRC review process for ARCs, CM/OAs, reports, etc.
- NRC expectations for reports when C3 or performance criteria are exceeded
- Interactions with the NRC (outage inspections, SG inspection reports)
- Lessons learned and action plan expectations/implementation; impact on EPRI guidelines
- NRC comments on quality and timeliness of submittals
- DG 1074 plans including comment resolution

### Non-Inspection SG Technical Issues (Session Chairs: 1 NRC + 1 Industry)

(NRC presentations: 90 min. EMCB staff?)

- NRC perspective on interim in-situ guidance and industry lessons learned letter
- Resolution of burst vs. leakage issue
- Expectations for new degradation types
- Integration of degradation assessments with actual plant conditions
- NRC perspective on risk
- Industry response to RIS
- Basis for 95/95 requirement on assessments

SG Inspection Oversight Issues (Session Chairs: 1 NRC + 1 Industry)

(NRC presentations: 45 min. EMCB staff; 45 min. IPB staff)

- Plans for inspections of SG Programs, including ECT oversight
- Guidance/training for NRC inspectors
- Outage phone call information; protocol for mid-inspection calls
- Changes to NRC SG oversight activities and overlap with INPO
- Inspection expectations for old vs. new SGs

Facilitated Discussions (Facilitators: TBD)

- Question will be held until facilitated discussions
- For up to the first 15 minutes of each facilitated discussion session, presentations by public stakeholders will be accepted

## SG Workshop Program and Schedule

Day 1			
7:30 - 8:30	Registration		
8:30 - 9:00	Opening Remarks - NRC Management		
9:00 - 10:30	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; text-align: center;">SG Inspection Technical Issues - Industry presentations</td> <td style="width: 50%; text-align: center;">SG Programmatic Issues - Industry presentations</td> </tr> </table>	SG Inspection Technical Issues - Industry presentations	SG Programmatic Issues - Industry presentations
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10:30 - 11:00	Break		
11:00 - 12:30	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; text-align: center;">SG Inspection Technical Issues (cont'd) - NRC presentations</td> <td style="width: 50%; text-align: center;">SG Programmatic Issues (cont'd) - NRC presentations</td> </tr> </table>	SG Inspection Technical Issues (cont'd) - NRC presentations	SG Programmatic Issues (cont'd) - NRC presentations
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12:30 - 2:00	Lunch		
2:00 - 3:30	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; text-align: center;">SG Inspection Technical Issues (cont'd) - Facilitated discussion</td> <td style="width: 50%; text-align: center;">SG Programmatic Issues (cont'd) - Facilitated discussion</td> </tr> </table>	SG Inspection Technical Issues (cont'd) - Facilitated discussion	SG Programmatic Issues (cont'd) - Facilitated discussion
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3:30 - 4:00	Break		
4:00 - 5:30	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; text-align: center;">Non-Inspection Technical Issues - Industry presentations</td> <td style="width: 50%; text-align: center;">SG Inspection Oversight Issues - Industry presentations</td> </tr> </table>	Non-Inspection Technical Issues - Industry presentations	SG Inspection Oversight Issues - Industry presentations
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Day 2			
8:30 - 10:00	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; text-align: center;">Non-Inspection Technical Issues (cont'd) - NRC presentations</td> <td style="width: 50%; text-align: center;">SG Inspection Oversight Issues (cont'd) - NRC presentations</td> </tr> </table>	Non-Inspection Technical Issues (cont'd) - NRC presentations	SG Inspection Oversight Issues (cont'd) - NRC presentations
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# **SG Lessons Learned Generic License Change Package**

SGTF / NRC Meeting  
December 20, 2000



## **Outline**

- **Recent Industry Activities**
- **Implications of SG Lessons Learned**
- **NEI SG Workshop**
- **Senior Management Meeting  
Planning**



## Recent Industry Activities

- SGMP Lessons Learned Letter on recent SG issues distributed on September 29
- Interim In Situ Pressure Testing Guidance issued on October 13
- Pressurization Rate Study ongoing. Initial report to be finalized in early 2001
  - Subject of several NRC meetings
  - Industry comments being resolved
  - Interim in situ guidance conservative



## Recent Industry Activities

- NEI 97-06 Revision 1 scheduled to be issued by December 31
  - Incorporates changes consistent with the SG Generic License Change Package
    - ◆ Changes since February version to allow release
  - Includes guidance on justifying deviations
  - Implementation required by mid 2001



## Recent Industry Activities

- Rev 6 of the SG Examination Guidelines in process. Scheduled to be issued by September 2001 (initially scheduled for spring 2001)
  - NDE data quality
  - Enhanced guidance for site specific qualification
  - Enhanced guidance for auto data analysis
  - Inspection frequency for improved materials



## Recent Industry Activities

- EPRI SGMP initiated activities:
  - Rev 2 of the In Situ Pressure Test Guidelines
  - Ad hoc committee on integrity assessment
  - Internal response to RIS 00-0022
  - Support NEI evaluation of the industry issues in the NRC Lessons Learned Task Force Report



## **NRC SG Action Matrix**

- Initial evaluation criteria:
  - Existing guidance adequate - no action required
  - Evaluating action - determining need for change to guidelines
  - Enhance guidance - developing information to address issue



## **NRC SG Action Matrix**

- Assessment of degradation mechanisms
  - Degradation assessments - enhance guidance
    - ◆ SGMP Lessons Learned letter
    - ◆ Evaluating need for additional tools
  - Hour-glassing - evaluating action
    - ◆ Guidelines define the process, plants provide details on damage mechanism thresholds
    - ◆ Evaluating need for additional tools
  - New degradation mechanisms - enhance guidance
    - ◆ Addressed in Operational Assessment discussion



## NRC SG Action Matrix

- NDE data quality
  - Acceptance criteria - enhance guidance
    - ◆ EPRI SGMP lessons learned letter
    - ◆ SG Examination Guidelines Rev 6 will address
  - New tubing - existing guidance adequate
    - ◆ EPRI report recommends criteria for new tubing
      - Signal-to-noise
      - Ovality
    - ◆ Tubing used for data sets is appropriate
      - Quality standards apply to new and used tubing



## NRC SG Action Matrix

- NDE data quality (continued)
  - Noise minimization techniques - existing guidance adequate
    - ◆ SG Examination Guidelines consider filtering algorithms as essential variables which must be demonstrated through Appendix H qualification



## **NRC SG Action Matrix**

### **■ NDE Qualification**

- Realistic flaws - existing guidance adequate
  - ◆ Particularly challenging area
  - ◆ Industry has been improving realism of flaw data sets
  - ◆ Long range programs are in place to continue the development of realistic flaws
- Site specific qualification - enhance guidance
  - ◆ Although addressed in Revision 5 of NDE Guidelines, additional guidance is planned for Revision 6.



## **NRC SG Action Matrix**

### **■ NDE Data Analysis**

- Computer data analysis - evaluating action
  - ◆ Ongoing R&D effort to improve and extend automated data analysis
  - ◆ Use independent QDA and Analyst Performance Tracking System rather than third party analysis
  - ◆ Computer analysis is available in lieu of an analyst team for some applications



## NRC SG Action Matrix

- Pressure testing
  - In situ screening criteria - existing guidance adequate
    - ◆ Use of previous in situ data addressed in NEI Review Board interpretation
    - ◆ Information on NDE sizing uncertainty in EPRI ETSS data sheets
    - ◆ In situ Guidelines recommends testing of indications where sizing capability is not defined regardless of screening criteria
    - ◆ When new degradation mechanisms are observed, if sizing capability is defined and indications are below the screening criteria testing is not necessary.



## NRC SG Action Matrix

- Pressure testing (continued)
  - Assessment of results - existing guidance adequate
    - ◆ Guidance is provided by In Situ Guideline and SGMP interim guidance letter with respect to leakage conditions during the conduct of proof pressure tests
    - ◆ In Situ Guidelines provide guidance for interpretation of inconclusive test results
      - Supplemental and post test NDE
      - Leakage correlation with NDE
      - Minimum hold times



## **NRC SG Action Matrix**

- **Pressure testing (continued)**
  - **Pressurization rate - evaluating action**
    - ◆ Interim in situ guidance issued by SGMP
    - ◆ Pressurization rate study ongoing
    - ◆ In Situ Guidelines being revised in 2001



## **NRC SG Action Matrix**

- **Operational Assessment**
  - **Fractional flaw methodology - evaluating action**
    - ◆ Appears to combine POD and growth, and interpret as a POD issue
    - ◆ Ad hoc committee on integrity assessment will address this issue
  - **Benchmarking - existing guidance adequate**
    - ◆ Integrity Assessment Guidelines require assessment of differences between the results of the CM and the previous OA



## NRC SG Action Matrix

- Operational Assessment (continued)
  - Predictive models
    - ◆ Two types: Lifetime Predictions and Operational Assessments
      - Lifetime Predictions - existing guidance adequate
        - Useful tool for degradation assessments - predicts degradation onset and adjusts growth rate estimates
      - Operational Assessments - existing guidance adequate
        - Integrity Assessment Guidelines contain minimum requirements for Operational Assessment models



## NRC SG Action Matrix

- Operational Assessment (continued)
  - POD and sizing accuracy
    - ◆ Sizing accuracy - existing guidance adequate
      - In Situ Guidelines provides guidance for cases when sizing techniques are not defined
      - EPRI ETSS sheets now provide sizing performance data
      - Integrity Assessment Guidelines provide guidance on pedigree of sizing data
      - Lessons Learned Letter provides recommendations regarding adjustments to sizing where data quality affects sizing evaluations
      - Industry continues to improve sizing capability



## NRC SG Action Matrix

- Operational Assessment (continued)
  - POD and sizing accuracy (continued)
    - ◆ POD - enhance guidance
      - Ad hoc committee established to study POD
  - Growth rates - existing guidance adequate
    - ◆ Considered during development of the guidelines.
      - Decided to not address growth rate separately; it is treated as part of the allowance for sizing uncertainty.
      - For non-Monte Carlo analysis, additional conservatism provided to account for uncertainties



## NRC SG Action Matrix

- Operational Assessment (continued)
  - New degradation mechanisms - enhance guidance
    - ◆ First time occurrence at a plant
      - SG Examination Guidelines and Integrity Assessment guidelines recommend use of industry data
    - ◆ First time occurrence in any SG
      - SG Examination Guidelines addresses actions required to define critical area
      - Industry to consider guidance on use of licensee corrective action program



## NRC SG Action Matrix

- Technical Specifications
  - Surveillance requirement - existing guidance adequate
    - ◆ Tube integrity verified by TRM surveillance
  - Current knowledge- existing guidance adequate
    - ◆ TS already incorporate current knowledge by requiring adherence to the SG Program
  - Operational leakage limit - existing guidance adequate
    - ◆ Limit is not a surrogate for structural integrity
    - ◆ Adequately protects the accident analysis leakage assumption



## NRC SG Action Matrix

- NEI Initiative
  - Contractor oversight - enhance guidance
    - ◆ SGMP Lessons Learned Letter provides guidance for utility oversight of vendor activities (tube integrity assessment and in-service inspection)
    - ◆ Revision 6 of the SG Examination Guidelines will address
  - Implementation of lessons learned - existing guidance adequate
    - ◆ NEI Review Board decisions
    - ◆ NDE Workshop and TAG meeting
    - ◆ Interim guidance on in situ testing
    - ◆ SGMP Lessons Learned Letter
    - ◆ Industry action items identified in the SG action plan



## **NRC SG Action Matrix**

- Changes to NEI 97-06 initiative - existing guidance adequate
  - Industry action items identified in the SG action plan
  - NEI Review Board decisions
  - Copies of revisions to the EPRI SGMP Guidelines



## **Generic License Change Package**

- Submitted to NRC on December 11
- No technically significant changes. Major revisions:
  - Op Leakage TS Action clarification
  - TRM format changes
  - TRM Bases added



## **Senior Management Meeting**

- Objective - Ensure understanding of remaining actions and schedule
- Agenda items
  - Implications of lessons learned
  - Revision to the Generic License Change Package
- Proposed for late January

**NEI**