

**Session 2**  
**February 27, 2001**

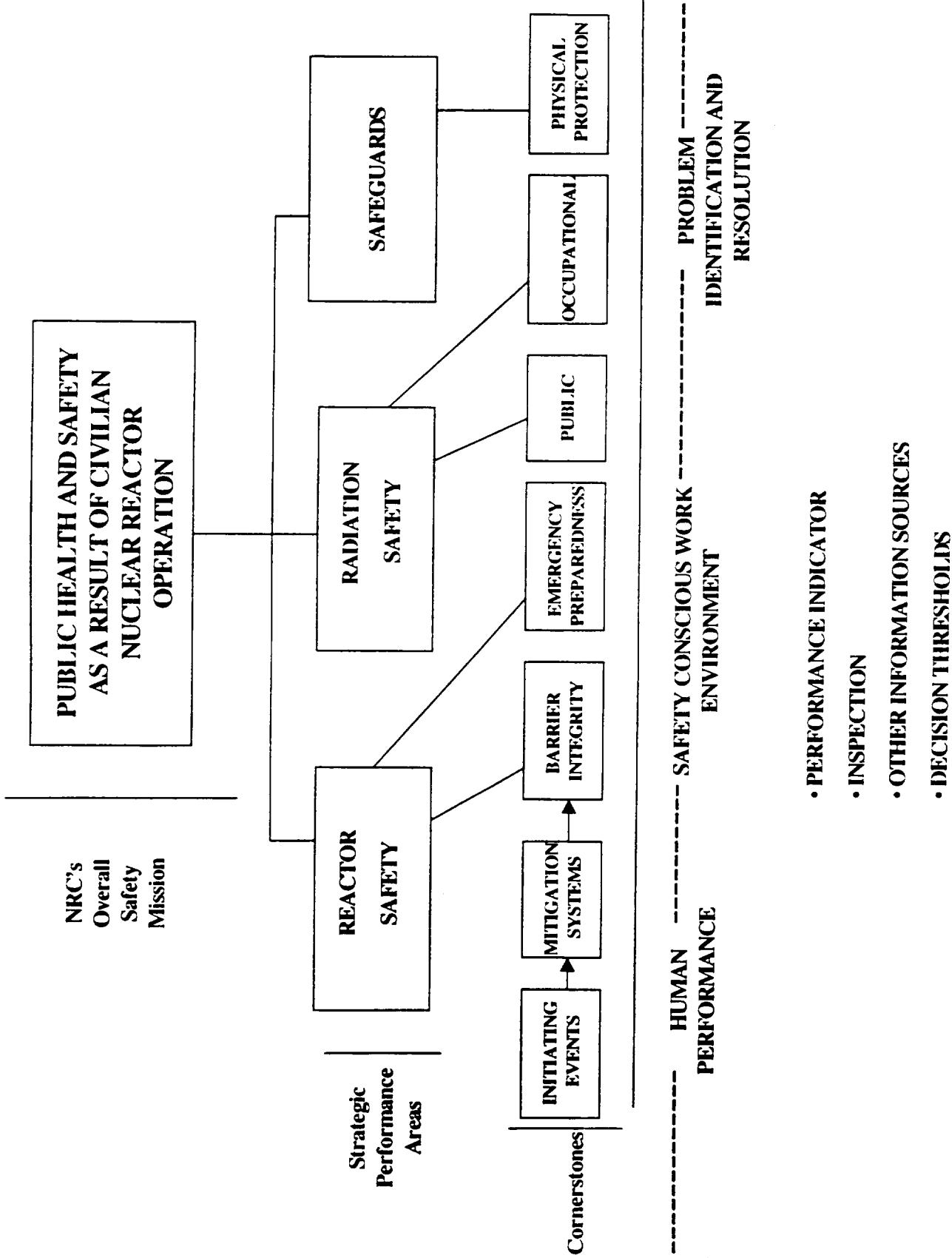
# Plans for NRC Inspections of Steam Generator Programs

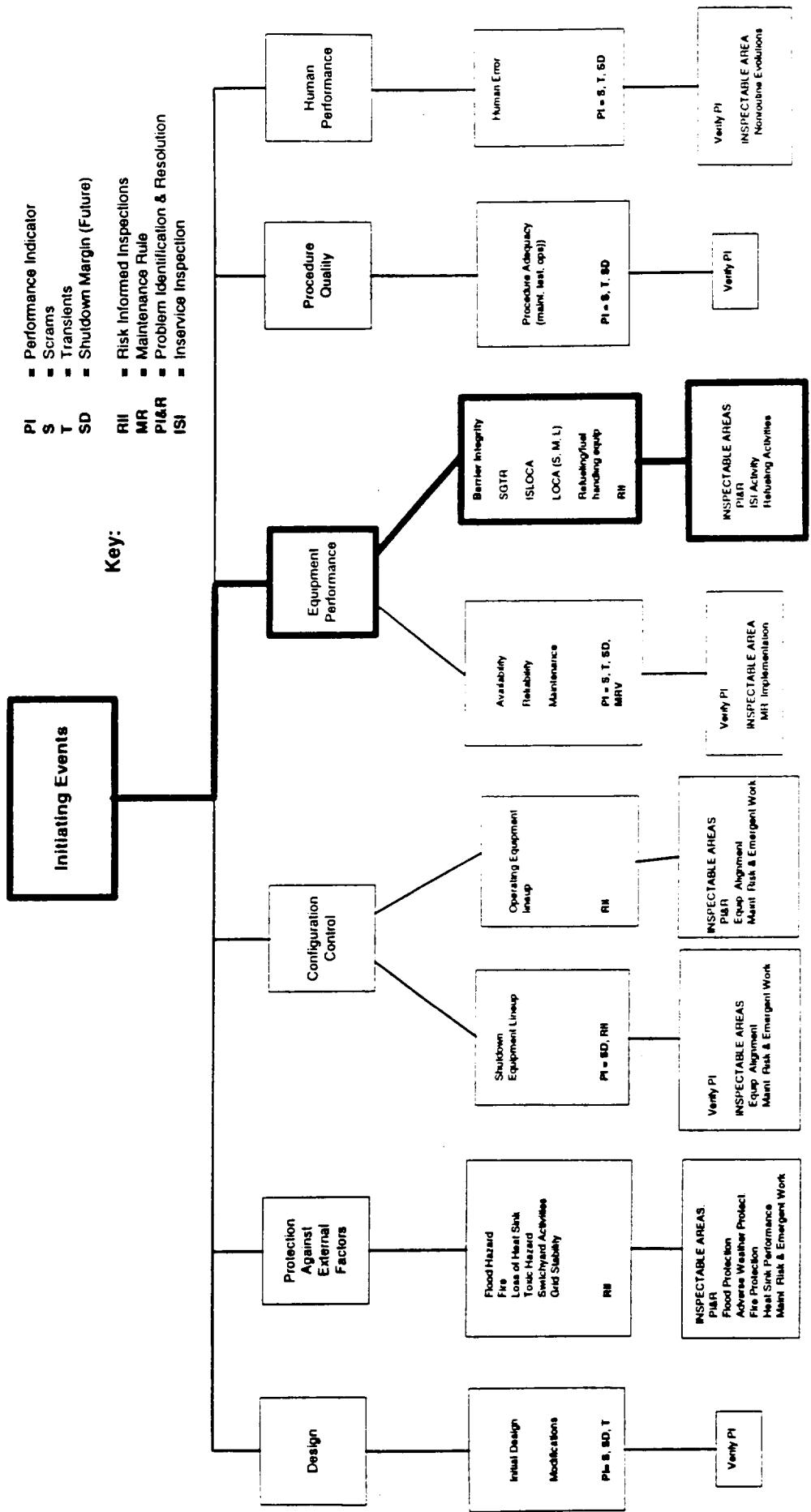
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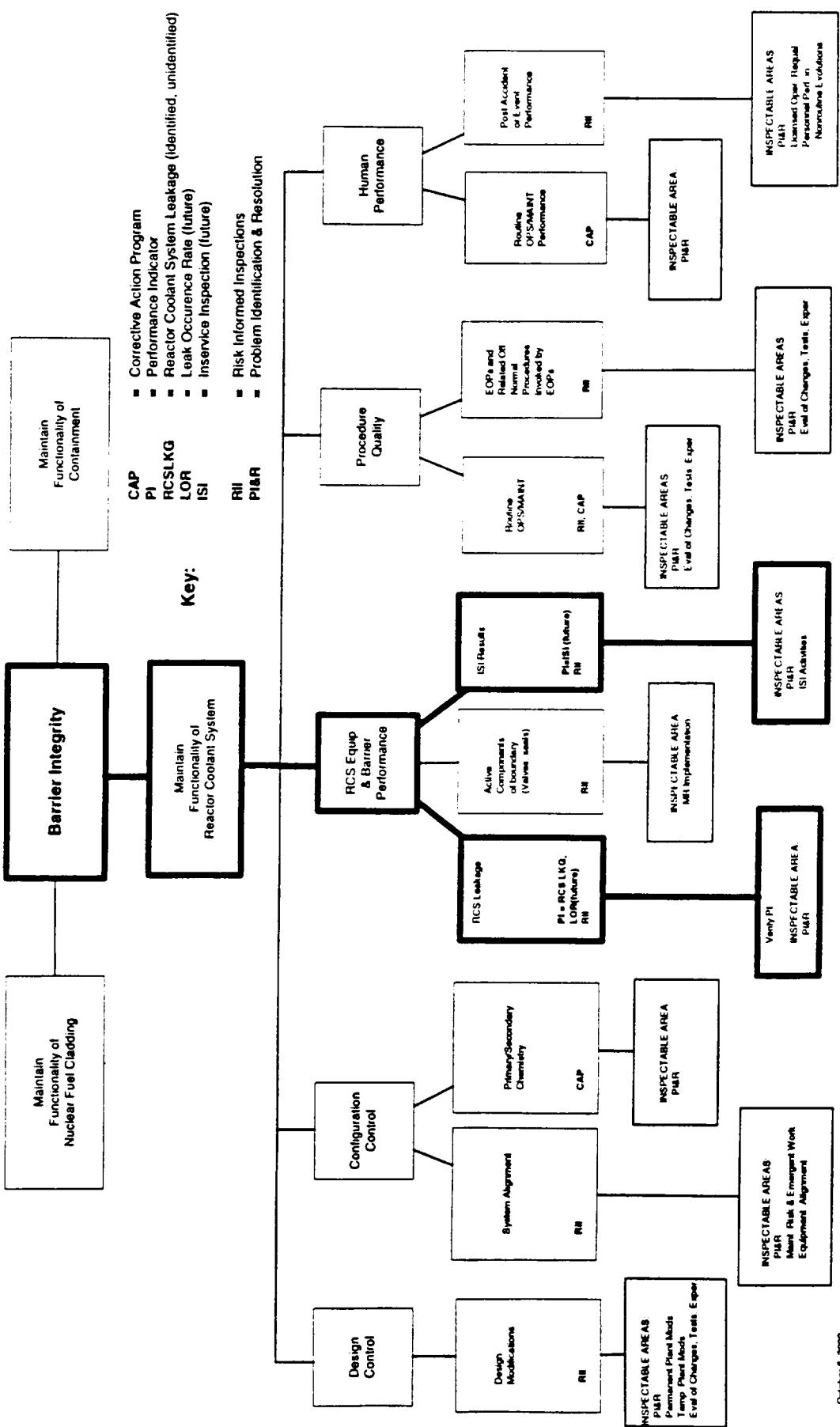


NRC Steam Generator Workshop  
SG Inspection Oversight Issues  
February 27 - 28, 2001

Doug Coe, Section Chief  
NRR/IIPB







## **OVERVIEW OF REACTOR OVERSIGHT PROCESS**

- **Seven Cornerstones of Safety**
- **Key Attributes of performance, e.g., Design, Configuration Control, Equipment and Barrier Performance, Procedure Quality, Human Performance, etc. in each Cornerstone**
- **Performance within each Key Attribute is assessed by Performance Indicators and Inspections**
- **Inservice Inspection (ISI) activities include Steam Generator Program inspections**
- **Inspection findings must be evaluated for significance in terms of contribution to Core Damage Frequency (delta CDF), Large Early Release Frequency (delta LERF), or other measure**

## **ROP CHANGES TO ADDRESS SG TUBE INTEGRITY ISSUES**

**The following changes to the ROP are under consideration:**

- **Revise ISI procedure to include inspection requirements and guidance specific to steam generators**
- **Integrate NRR outage phone calls with licensee into inspection program**
- **Consider immediate response/followup capability for potential degraded conditions**
- **Provide technical guidance to inspectors for monitoring plants with primary to secondary leakage**
- **Determine need for and define any additional inspector training to implement revised inspection procedure**
- **Above actions are scheduled to be completed during April - September 2001**

# **Guidance/Training for NRC Inspectors and Outage Phone Call Protocol**

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**NRC Steam Generator Workshop  
SG Inspection Oversight Issues  
February 27 - 28, 2001**

**Cheryl B. Khan  
NRR/DE/EMCB**

## Guidance/Training for NRC Inspectors

- Additional guidance is being developed for inspectors - baseline inspection and technical guidance
- Additional training for inspectors will be provided, but extent is dependent on final revisions to the baseline inspection procedure

## **SG Phone Call Protocol**

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- **Purpose:** Monitor trends (for occasional INs)  
Provide feedback when staff has concerns
- **Plants Affected:** A subset of those utilities  
performing SG inspections
- **Timing:** Approximately 75% of data analysis  
is complete
- **Topics:** Inspection scope, results and relevant  
activities (see attached “Discussion Points”)

## **SG Phone Call Protocol (cont.)**

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- Expectations

- Changes to Phone Call Protocol?
  - No significant changes expected
  - Docketing requests for phone calls and “Discussion Points”
- Potential minor modifications to “Discussion Points” regarding expectations
- Staff working on means to incorporate phone calls in inspection process (per lessons learned recommendation)

# **Discussion Points**

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## **Steam Generator Tube Inspection Results**

Licensees' steam generator (SG) tube eddy current (EC) inspections play a vital role in the management of SG tube degradation. The results are used to demonstrate adequate structural and leakage integrity of the SG tubes. NRC staff is interested in discussing the licensee's steam generator inspection plans and results, although the licensee is not required to participate in this discussion.

In addition to the traditional areas of discussion listed below, the staff is also interested in having the licensee discuss and describe any actions taken in response to the Indian Point 2 lessons learned.

Typical areas of discussion include:

- Primary to secondary leakage prior to shutdown
- Results of secondary side hydro
- For each steam generator, a general description of areas examined; include expansion criteria and specify type of probe used in each area
- For analyzed EC results, describe bobbin indications (those not examined with RPC) and RPC/Plus Point/Cocco indications. Include the following information: location, number, degradation mode, disposition, and voltages/depths/lengths of most significant indications.
- Description of repair/plugging plans
- Discussion of previous history; "look backs" performed; consideration of similar plants' experiences
- Discussion of new inspection findings, including loose parts indications
- Description of in-situ pressure test plans and results; include tube selection criteria, test pressure plans, test configuration
- Describe tube pull plans and preliminary results; include tube selection criteria and evaluation plans
- Assessment of tube integrity for previous operating cycle
- Assessment of tube integrity for next operating cycle
- Provide schedule for steam generator-related activities during remainder of current outage

- Discuss what steps have been taken, or will be taken, in response to the lessons learned from the Indian Point Unit 2 tube failure. In addition, please be prepared to discuss the following:
  - a) Discuss the actions that are taken in response to identifying a new degradation mechanism, and
  - b) Discuss the actions taken to ensure that data noise levels are acceptable, and
  - c) Address data quality issues and the need for criteria to address data quality."

**Note:** It may facilitate the discussion if the licensee provides details on the topics listed above prior to the conference call (e.g., simple tables and figures).



## NRC Steam Generator Workshop

# INPO Steam Generator Review Visit Program

Alan Smith

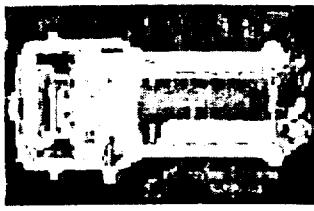
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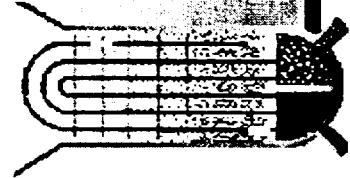


# Program Purpose

Ensure that utilities have steam generator management programs in place that promote safe and reliable steam generator operation. Program scope includes:

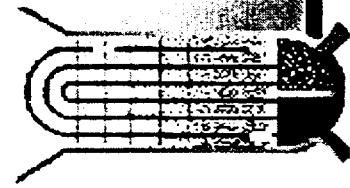
- conditions affecting reliability and availability
- in-service inspection and repair
- leak detection, monitoring, and action levels





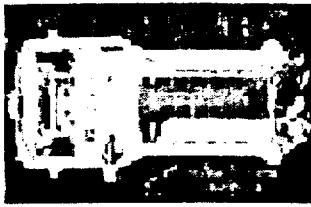
# Program Development

- industry/INPO recognize need for safe and reliable steam generator performance
- separate and distinct from INPO's evaluation process
- steam generator review visit guidance developed and periodically revised with industry input
- applicable EPRI and NRC documents serve as technical basis
- review visits go beyond determining how a station is implementing NEI 97-06

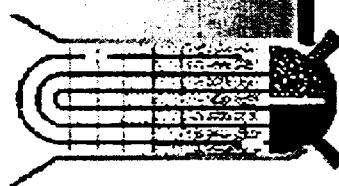


## Program Development (cont.)

- review visits began in 1995
- industry peer involvement
- ISI vendor involvement
- assistance role
- year-end summary of results sent to industry



## Program Logistics

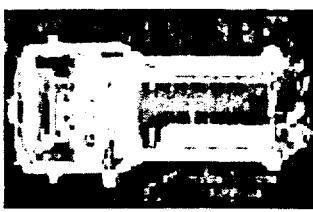


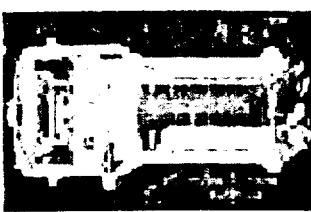
- one week of preparation followed by one week detailed station review conducted approximately three months prior to a refueling outage
- review team includes INPO engineering and chemistry evaluators and two or three industry peers experienced in steam generator program management and data analysis



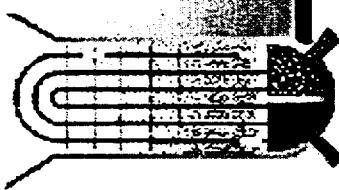
## Program Logistics (cont.)

- identified strengths and recommendations for improvement are sent in a report to utility senior management
- safety-significant issues require a utility response and are followed up during next INPO evaluation

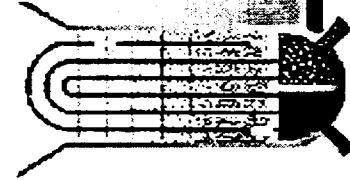




## Program Status



- 41 domestic and 2 international station review visits performed to date
- 92 utility and vendor peers have participated
- 6 assistance visits conducted or facilitated
- continuing participation in industry steam generator groups



## Program Highlights

- identified important industry and individual station issues
- assisted stations in implementing repair plans
- promoting industry self assessment, peer reviews, and benchmarking
- IIG participation and TAG presentations
- INPO web page dedicated to steam generator operating experience, lessons learned, news, etc.



## Future Plans

- 12 domestic and one international review visit planned for 2001
- beginning follow-up visits to previously reviewed stations
- additional emphasis on stations with original steam generators