NRC INDIAN POINT UNIT TWO AUGMENTED INSPECTION TEAM EXIT MEETING

Inspection Report 50-247/2000-02
March 29, 2000

EXHIBIT
Root
Cause
Analysis
By
Industry
Conf

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AGENDA

- Introduction and Background - L. Doerflein, Team Manager
- Preliminary Findings - R. Lorson, Team Leader
- Consolidated Edison Comments - J. Groth, Chief Nuclear Officer, ConEd
- Concluding Remarks - W. Lanning, Director, Division of of Reactor Safety, Region I

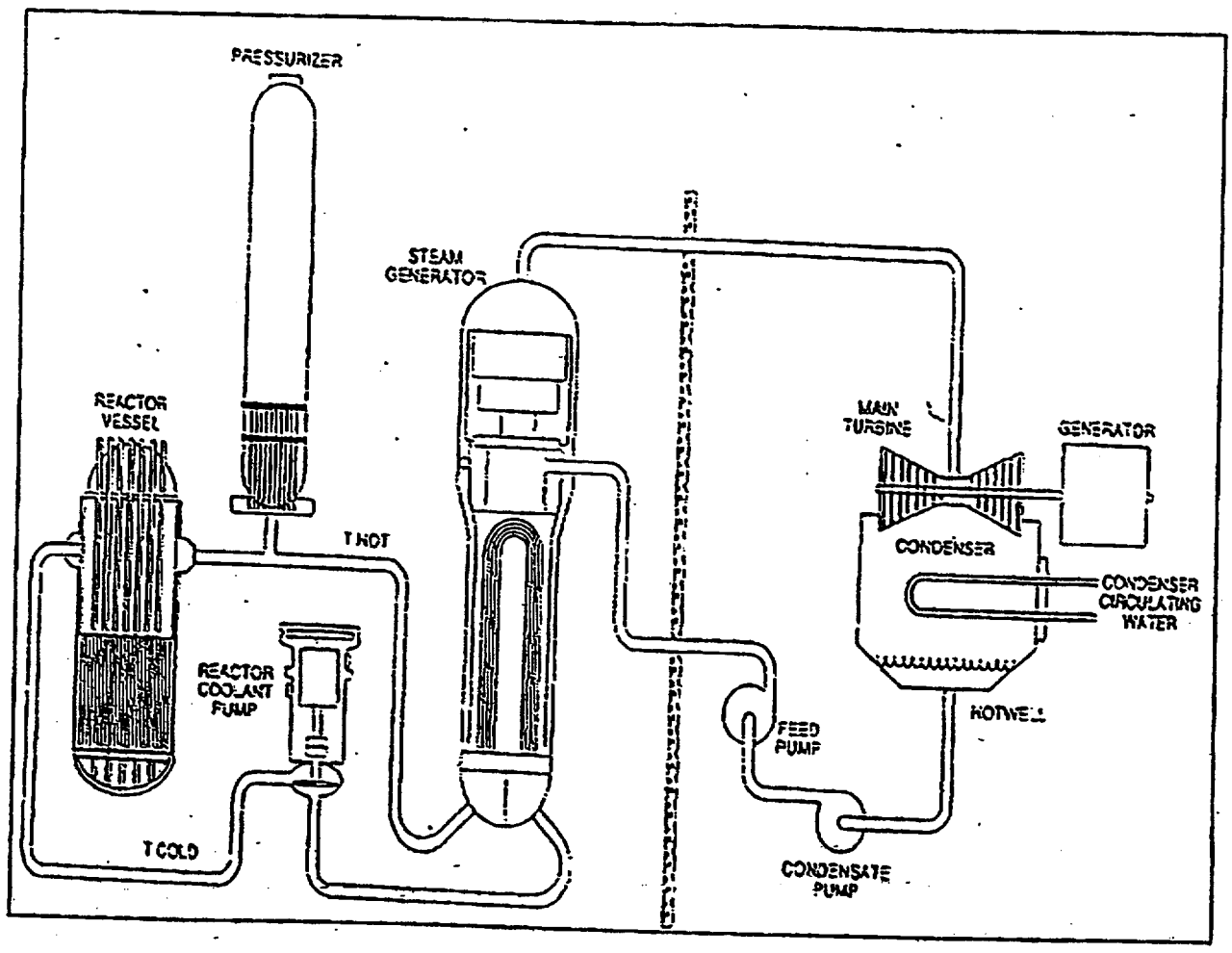
INTRODUCTION AND BACKGROUND

- Establishment of the Augmented Inspection Team (AIT)
- Purpose of an AIT
- Review of Team Charter, Including Team Membership
  - Cause of the Steam Generator (SG) Tube Failure - Separate NRC Review

AIT TEAM CHARTER

- Develop Sequence of Events
- Review Operator Performance
- Review Equipment Performance
- Plant Risk
- Radiological Assessment
- Emergency Response Organization
- Review SG History
  - Cause of Tube Failure Under Separate NRC Review

SYSTEM DIAGRAM



OVERVIEW

- Initial Response Prompt/Appropriate
- No Offsite Radiological Impact
- Licensee Successful in Achieving Cold Shutdown
- Several Operator Performance/Procedural/Equipment Issues Identified Which Delayed Achieving Cold Shutdown Conditions
- Several Emergency Response Problems
- No Impact on Public Health and Safety

AIT FINDINGS

- Sequence of Events
- Steam Generator Monitoring
- Operator Performance
- Procedure Quality
- Equipment Performance
- Emergency Response
- Radiological Assessment
- Safety Significance

SEQUENCE OF EVENTS

February 15. 2000

7:17 p.m. -- Operators Identified Increased SG Leak
7:29 p.m. -- Declared Alert
7:30 p.m. -- Tripped Reactor
7:41 p.m. -- State/County Officials Notified
8:31 p.m. -- Isolated Affected SG
9:02 p.m. -- Operators Initiated Plant Cooldown
9:04 p.m. -- Manually Initiated Safety Injection
11:38 p.m. -- Tube Leak Stopped

February 16. 2000

12:39 p.m. -- Shutdown Cooling System
4:57 p.m. -- Achieved Cold Shutdown
6:50 p.m. -- Terminated Alert

STEAM GENERATOR MONITORING

- SG Tube Leakage Monitored During Cycle
- Pre-Event Leak Monitoring Actions Appropriate
  - Shift Monitoring of Tube Leakage
  - Operator Review of Tube Leak Procedure
- Secondary Chemistry Acceptable

OPERATOR PERFORMANCE

- Initial Response Prompt and Appropriate; Procedure Adherence Good Overall

- Some Deficiencies in the Plant Cooldown Phase
  - Initial Cooldown Excessive
  - Operator Recognition of Plant Configuration

PROCEDURE QUALITY

- Procedures (AOPs/EOPs) to Guide Initial Response were Good
- Several Procedural Deficiencies Challenged Operators During the Plant Cooldown Phase
  - Delayed Placing Shutdown Cooling In-Service
  - System Configuration
  - Shutdown Conditions

EQUIPMENT PERFORMANCE

- Event Mitigation Systems Worked Properly
  - Reactor Protection System
  - Auxiliary Feedwater System
  - Safety Injection System
- Some Pre-existing Equipment Problems Challenged Operators
  - SG Leak Rate Trend Recorder
  - Automatic Condenser Vacuum Control Valve
  - Condenser Mechanical Vacuum Pump
  - Containment Valve Seal Water System Design Problem
  - Pressurizer Power Operated Relief Valve Design Problem

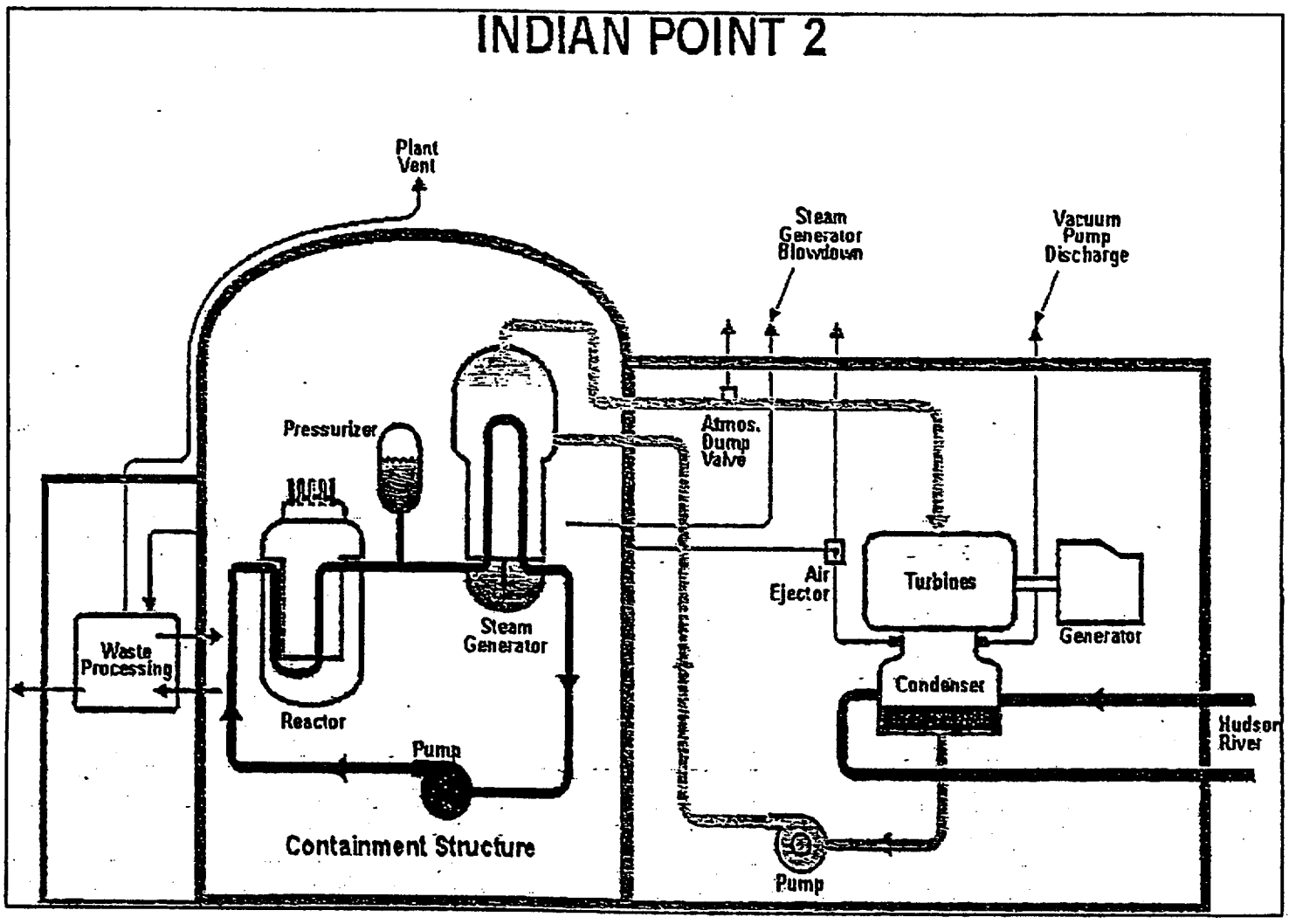
EMERGENCY RESPONSE

- Emergency Response Protected Health and Safety of Public
- Event Classified Properly/Good Critique of Emergency Response

- Emergency Plan/Implementing Procedure Problems

  - Augmented Emergency Response Facility Staffing Not Timely
  - Accountability Problems
  - Emergency Response Data System (ERDS) not Operable for Several Hours (Pre-Existing Problem)
  - Problems in Implementation of the Media Response Plan
  - Emergency Response Facility Equipment Problems
  - Technical Support Timeliness and Quality Issues

RADIOLOGICAL RELEASE PATHS



RADIOLOGICAL ASSESSMENT

- Off-site Monitoring Good
- No Radioactivity Detected
- Conclusion - No Radiological Impact

POTENTIAL RADIOLOGICAL EFFECT

- Conservative; Bounding Calculation
- Any Releases Small Fraction of Allowable Limits

	Calculated Event Release	Background	Licensee Limit	% of Licensee Limit
Gas	~.01 mrem	~ 300 - 400 mrem/year	10 mrem/yr (Total Body Gamma Air Dose)	0.1%
Liquid	~.0009 mrem		3 mrem/yr (Total Body)	0.03%

SAFETY SIGNIFICANCE

- Event Consequences
  - No Measurable Radioactivity Offsite Above Normal Background
  - There were no Consequences to Public Health and Safety
- Risk Perspective
  - Analyzed to Determine Necessary Licensee and NRC Response
  - Some Increase in Calculated Risk