

Davis-Besse Nuclear Power Station



IMC 0350 Meeting

Desired Outcomes

Return to Service Plan Progress

- Plant Programs and Scheduled Activities.....Lew Myers
- FLUS Monitoring System.....Craig Hengge

Management and Human Performance

- Problem Solving/Decision Making.....Lew Myers
- Management Observation Program.....Kathy Fehr

Quality Oversight

- Safety Culture Survey; Safety Conscious Work Environment Survey; Quality Assurance Observations.....Bill Pearce

Return to Service Building Blocks Progress

- System Health.....Bob Schrauder
- Containment Health.....Lynn Harder
- Restart Action Performance.....Clark Price
- Program Compliance.....Jim Powers

Integrated Schedule Progress

- Upcoming Activities.....Greg Dunn

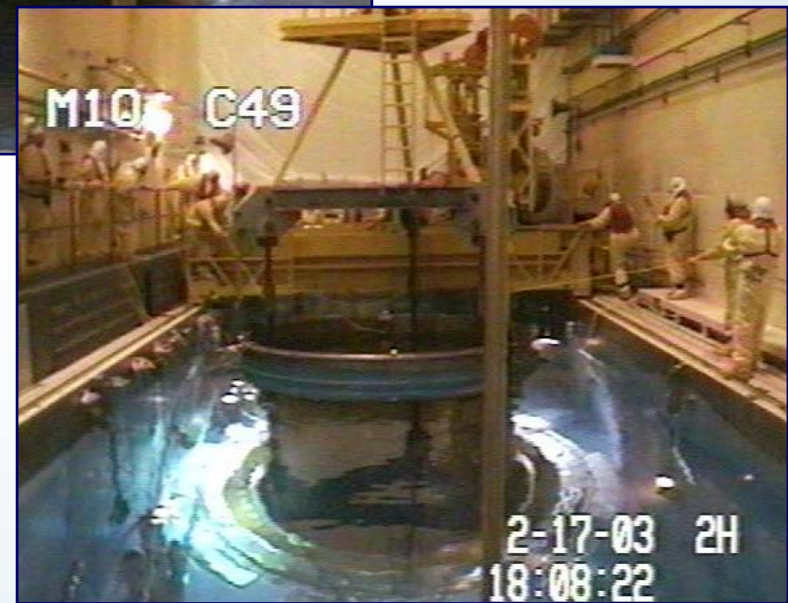
Return to Service Plan Progress



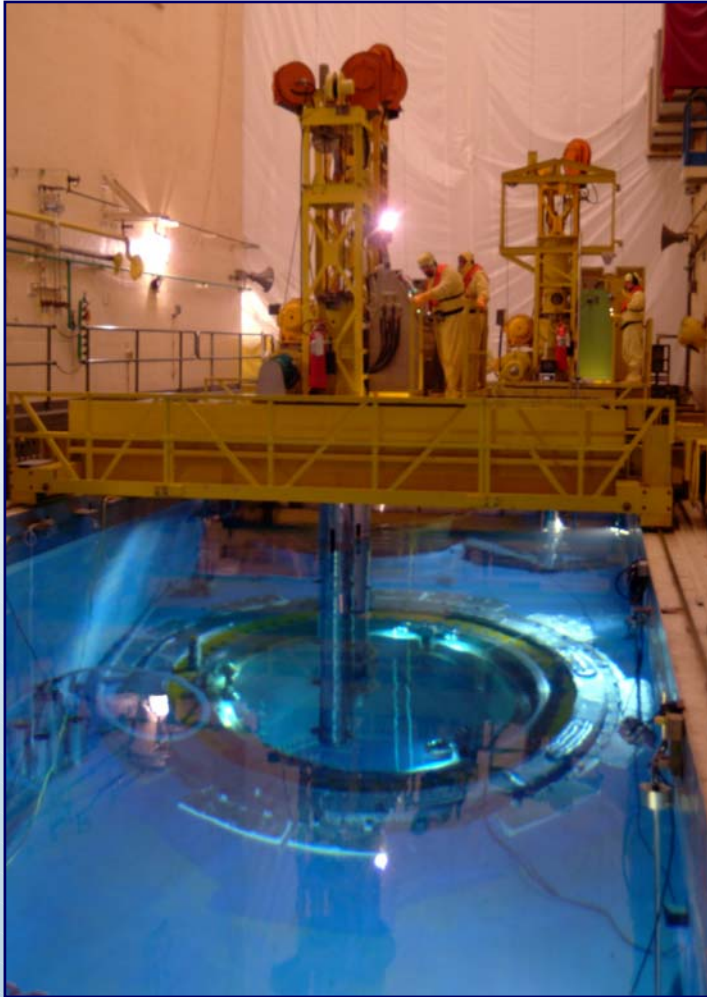
Lew Myers
Chief Operating Officer - FENOC

Return to Service Plan Progress

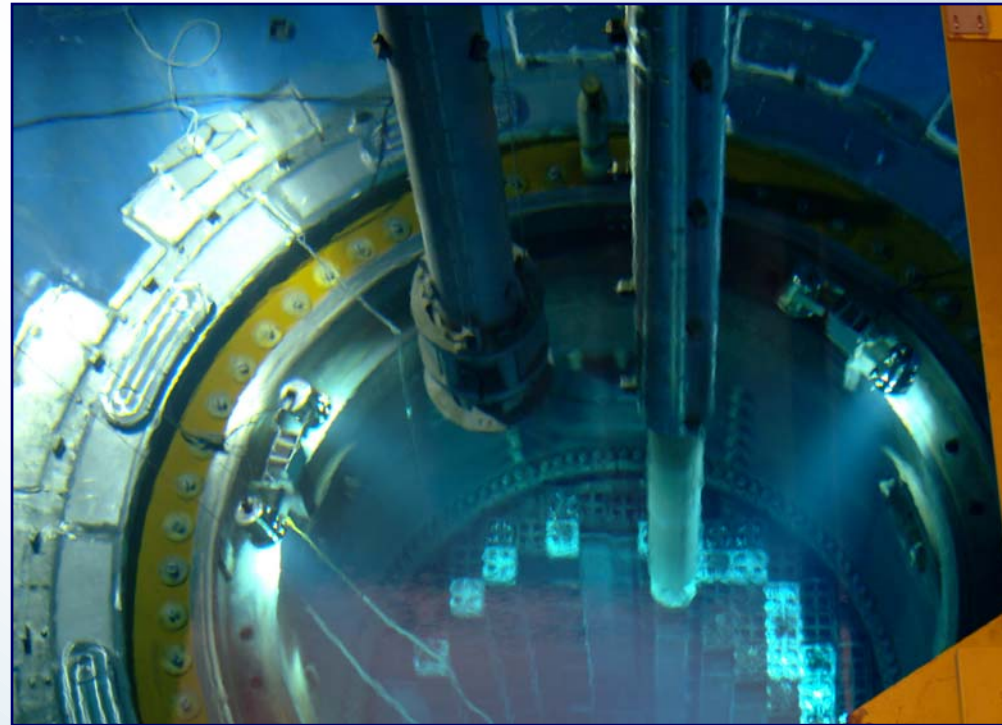
- Fuel Reload Preparation
 - Core support assembly
 - Upper Plenum
 - Vessel cleaned



Return to Service Plan Progress

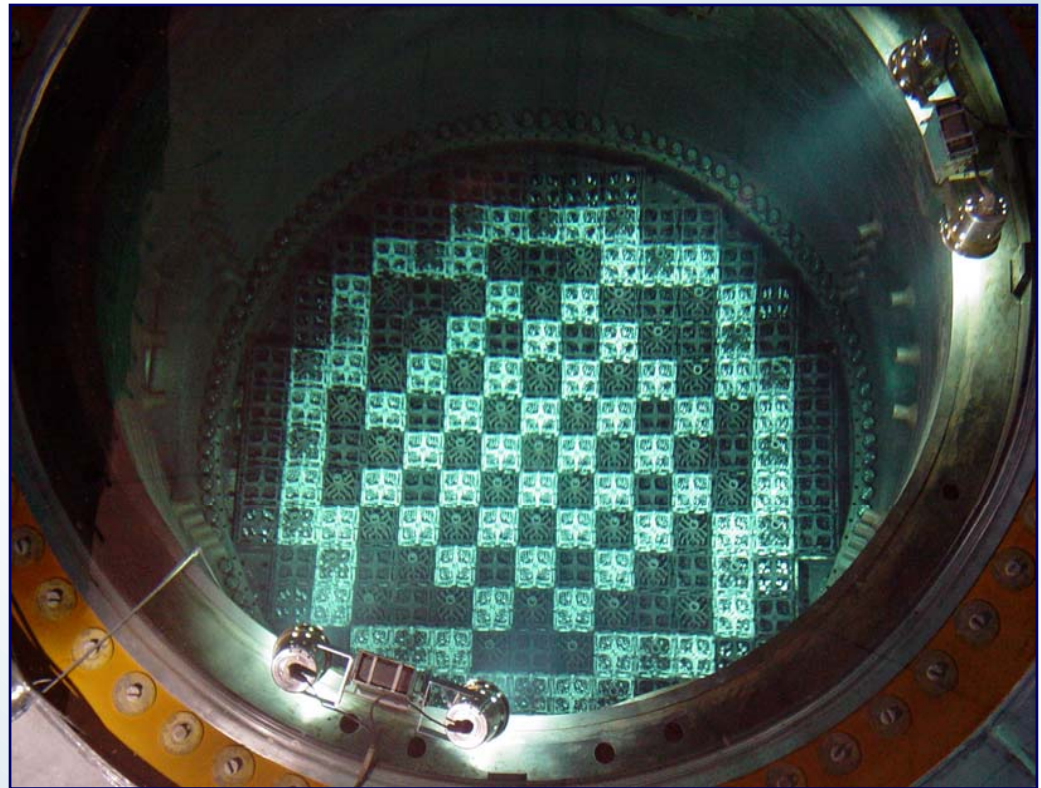


- Fuel Load Activity
 - Began Feb. 19
 - 177 fuel assemblies



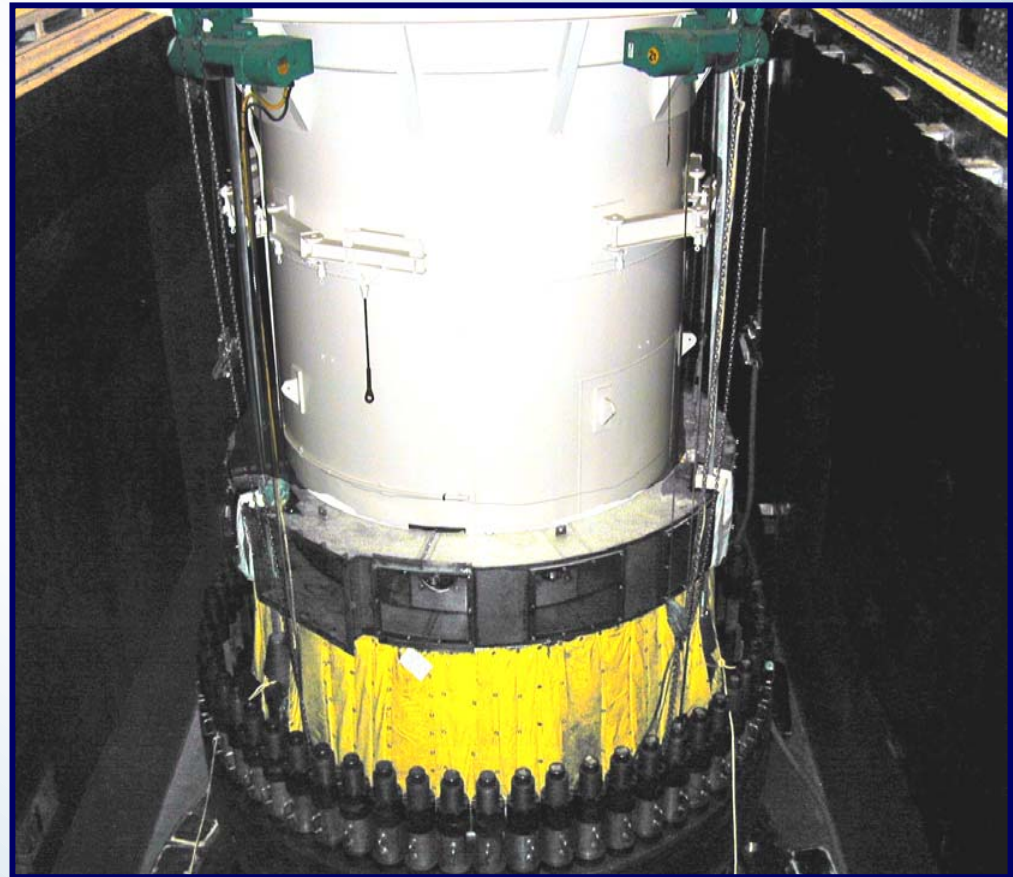
Return to Service Plan Progress

- Fuel Load Completed
 - Feb. 26, 2003



Return to Service Plan Progress

Reactor Head Installation Completed - March 10



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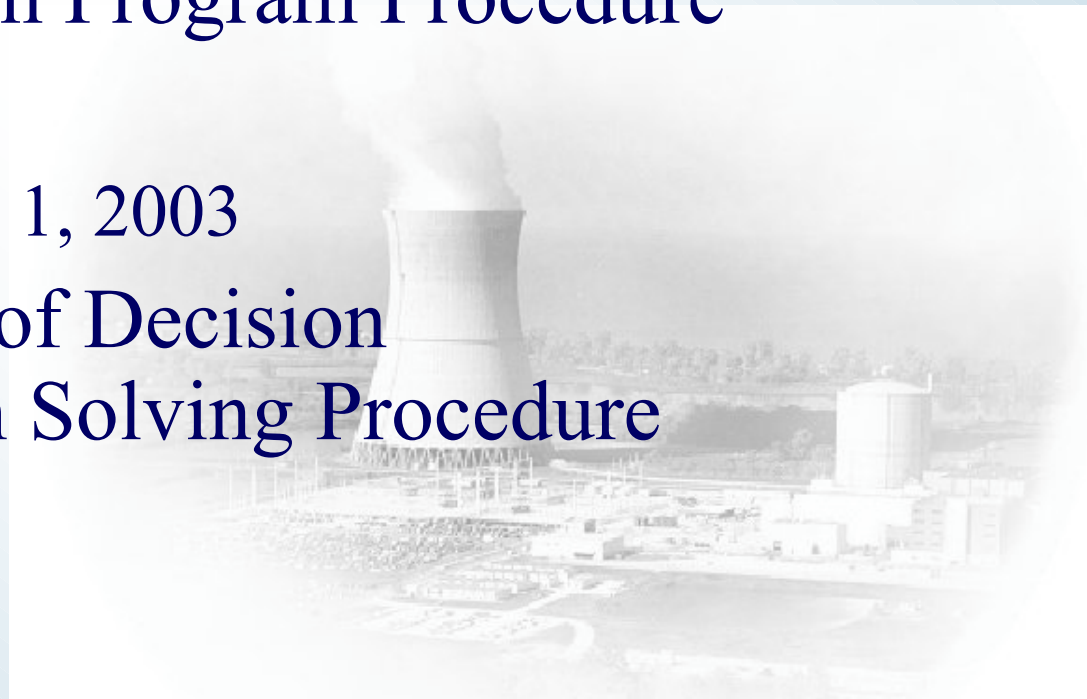
Return to Service Plan Progress

- FLUS Under Vessel Monitoring System
 - Installation underway
 - Conduit, cabinets, and tubing



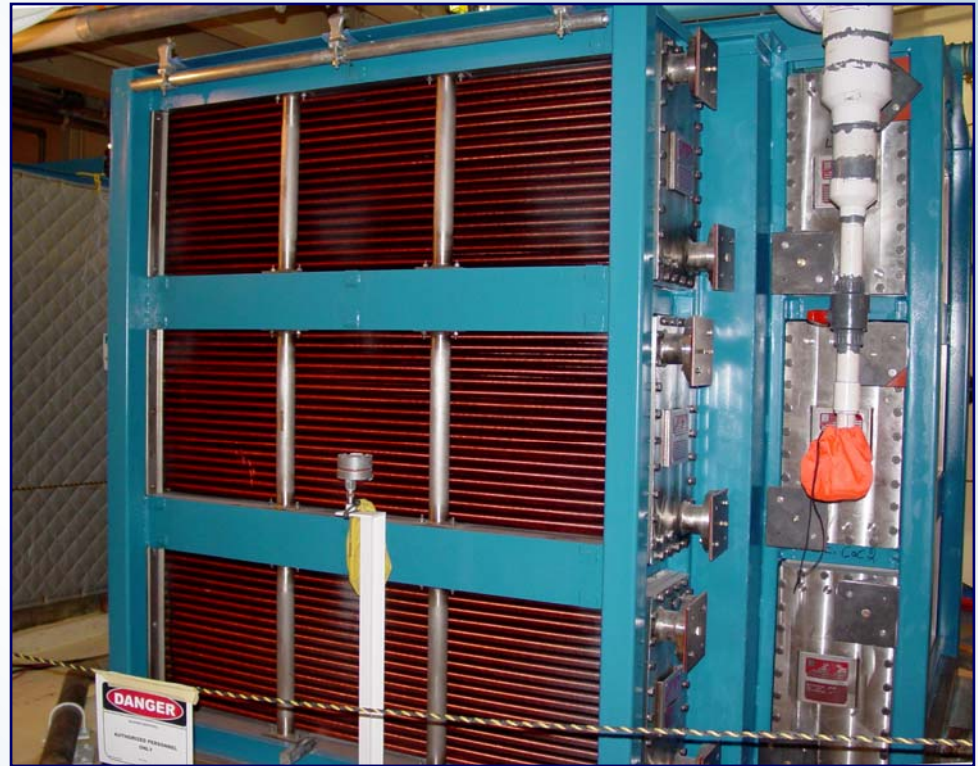
Return to Service Plan Progress

- Safety Features Actuation System Test
- Integrated Diesel Test
- Corrective Action Program Procedure Revision
 - Effective March 1, 2003
- Implementation of Decision Making/Problem Solving Procedure



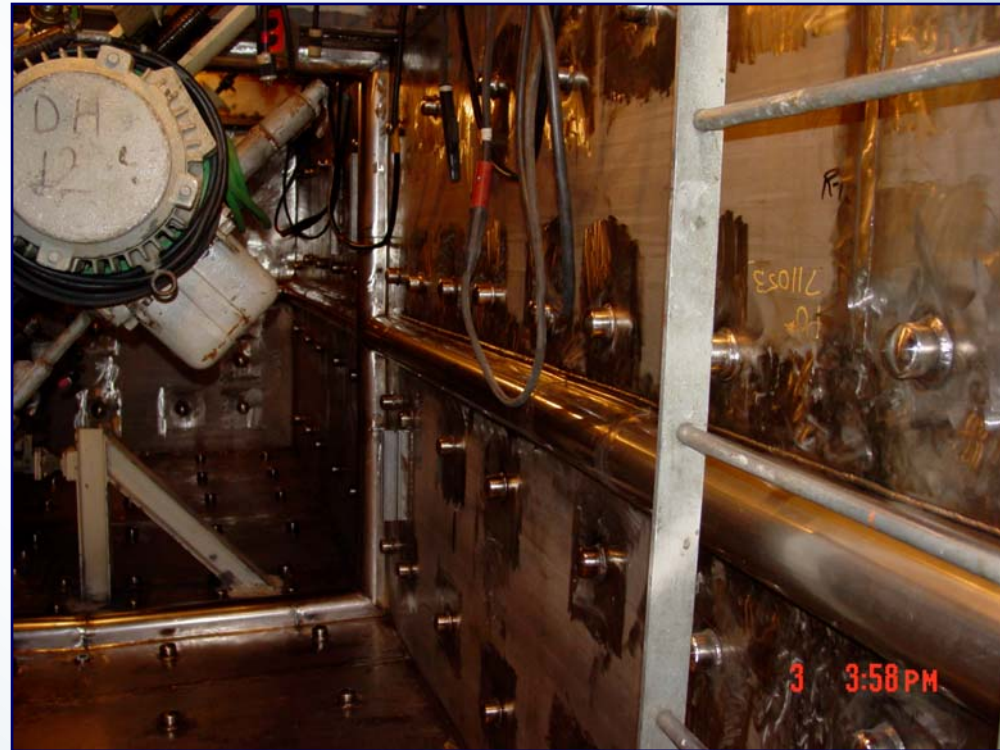
Return to Service Plan Progress

- Containment Air Coolers Installed
 - Stainless steel coils



Return to Service Plan Progress

- Decay Heat Pit Tank Upgrade
- Mode 6 Restart Readiness Reviews Conducted



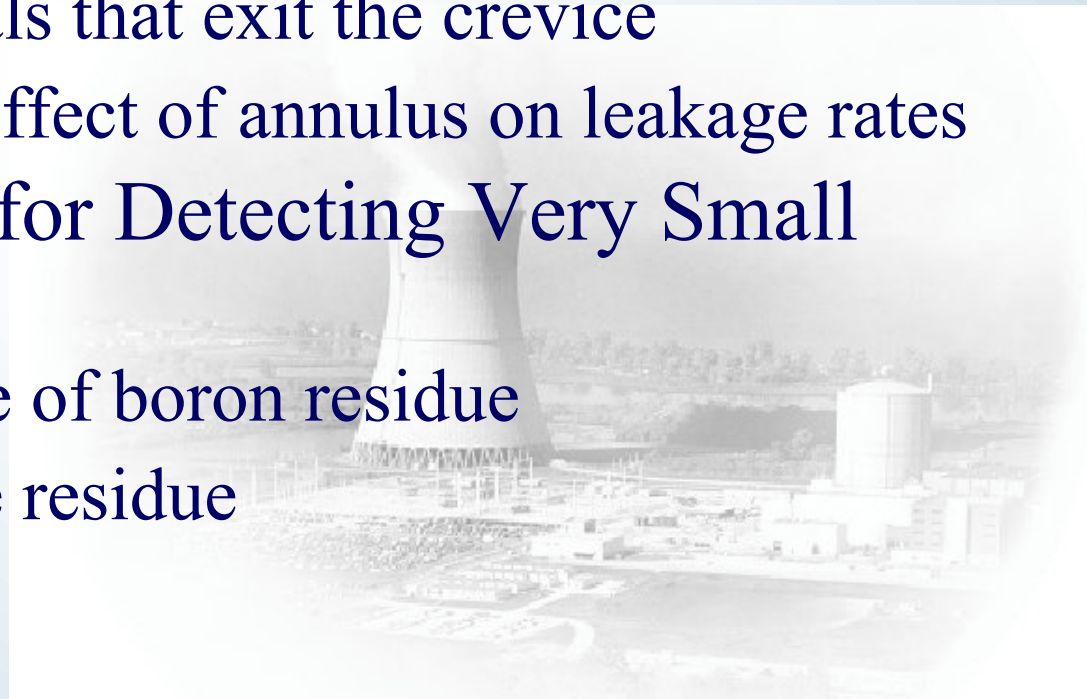
FLUS Online Leak Monitoring System



Craig Hengge
Engineer - Plant Engineering

Framatome Leak Detection Testing

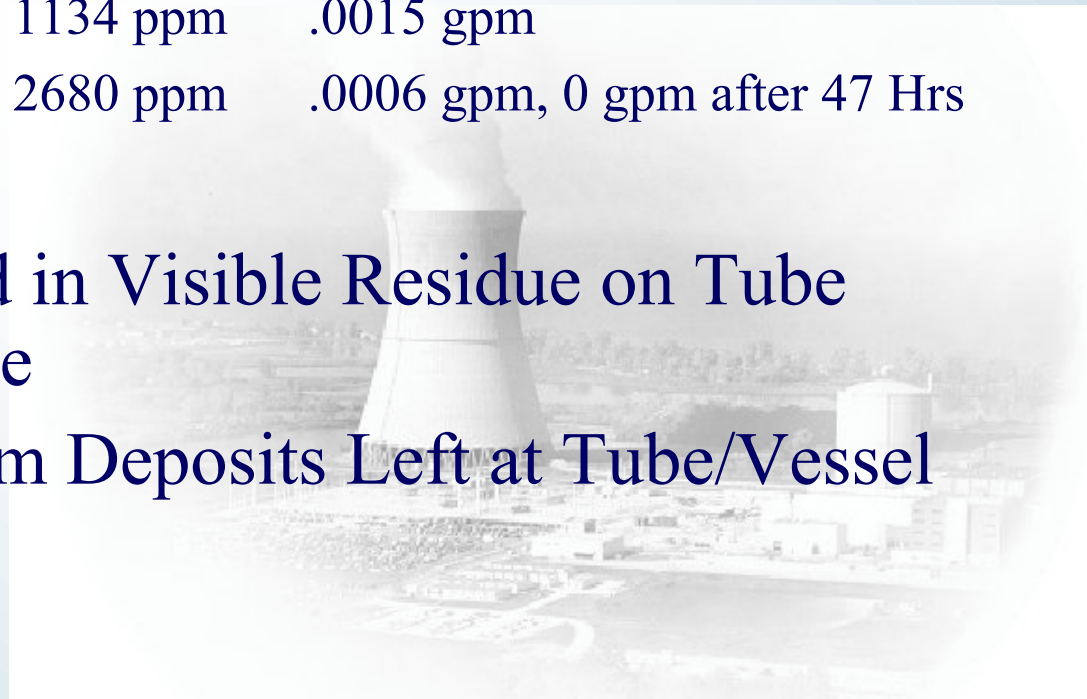
- Measure Leak Rate as a Function of Simulated Flaw Geometry
 - Identify residue deposit chemistry and any volatile chemicals that exit the crevice
 - Investigate the effect of annulus on leakage rates
- Verify Methods for Detecting Very Small Leaks
 - Visible evidence of boron residue
 - Other detectable residue



Framatome Leak Detection Testing

<u>Test #</u>	<u>Duration</u>	<u>Boron</u>	<u>Leak Rate</u>
1	8 Hours	2680 ppm	.015 gpm
2	8 Hours	2680 ppm	.0015 gpm
3	8 Hours	2680 ppm	.0004 gpm
4	8 Hours	1134 ppm	.0015 gpm
5	55 Hours	2680 ppm	.0006 gpm, 0 gpm after 47 Hrs

- All Tests Resulted in Visible Residue on Tube and Vessel Surface
- Significant Lithium Deposits Left at Tube/Vessel Surface



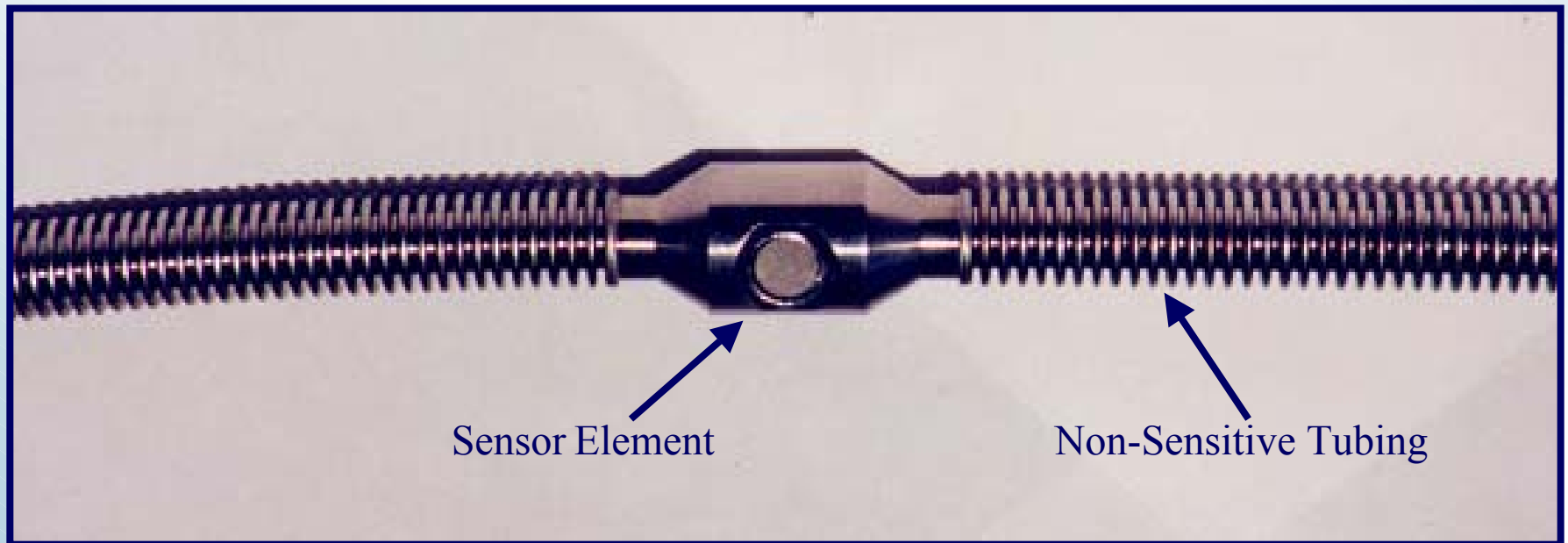
FLUS Online Leak Monitoring System



- State-of-the-Art System
- 10 Year Operational History
 - 12 installed in Europe and Canada
- Detect and Locate Under Vessel Leakage
 - Located between Reactor Vessel insulation and bottom of Reactor Vessel

FLUS Online Leak Monitoring System

- Installation
 - Simple installation; conduit, cabinets, tubing
 - Tubing is 3/8" diameter
 - Approximate three weeks to complete



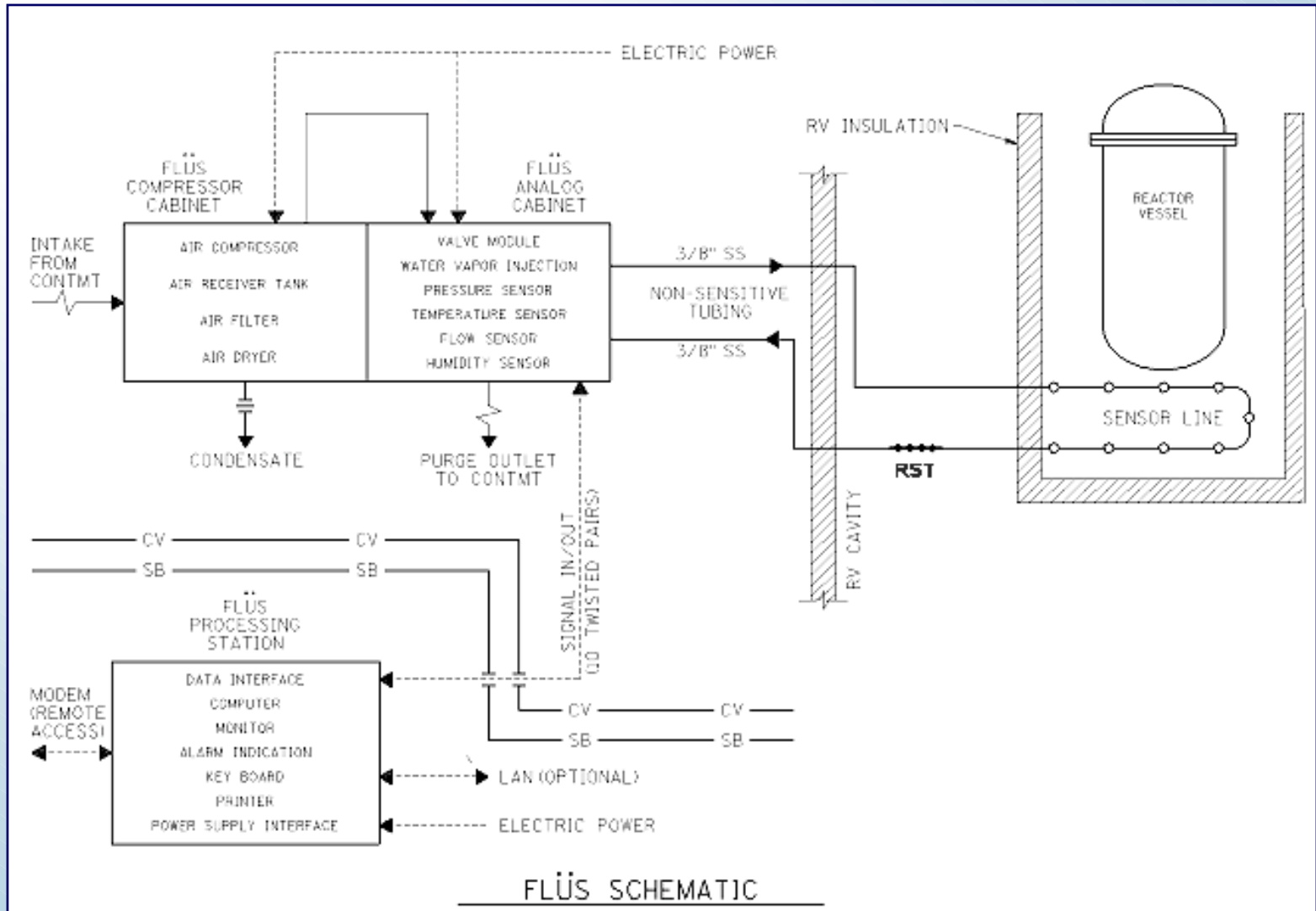
16

FLUS Online Leak Monitoring System

- Eight Channel System
 - Allows future upgrade
- Expected sensitivity:
.004 to .02 gpm
- FLUS Sensitivity Test
During Mode 3



FLUS Online Leak Monitoring System



Problem Solving/Decision Making Nuclear Operating Procedure



Lew Myers
Chief Operating Officer - FENOC

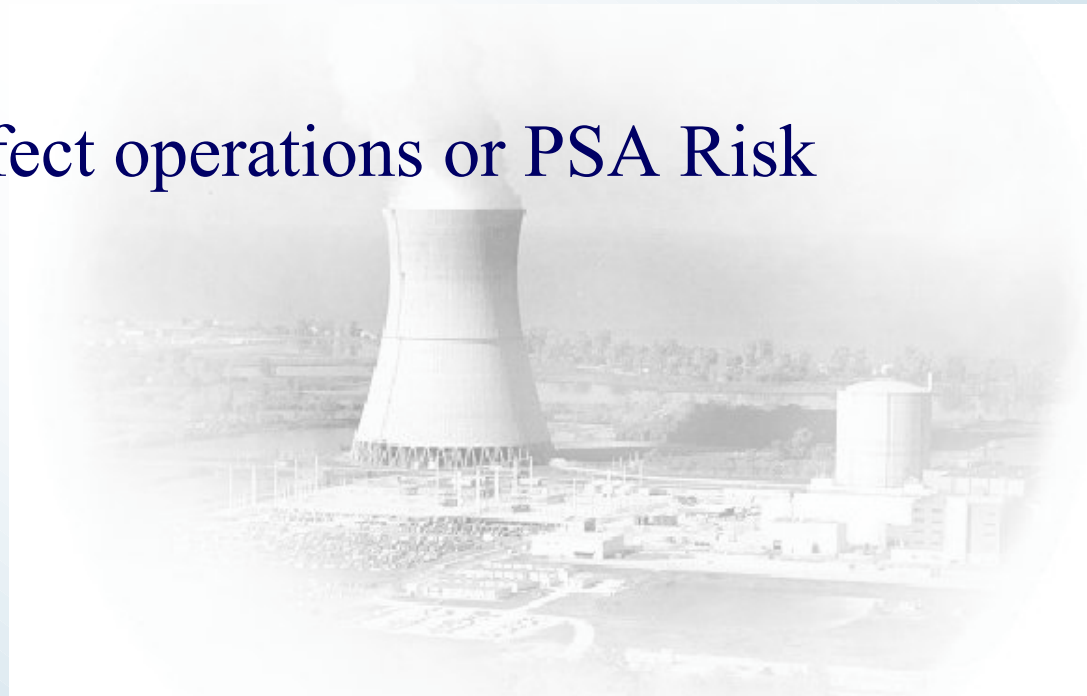
Problem Solving/Decision Making Nuclear Operating Procedure

- Purpose
 - Ensure plant issues are addressed consistently and effectively without consequences to plant safety and reliability
 - Evaluate significance and potential impact on nuclear safety
 - Determine level of management approval based on significance



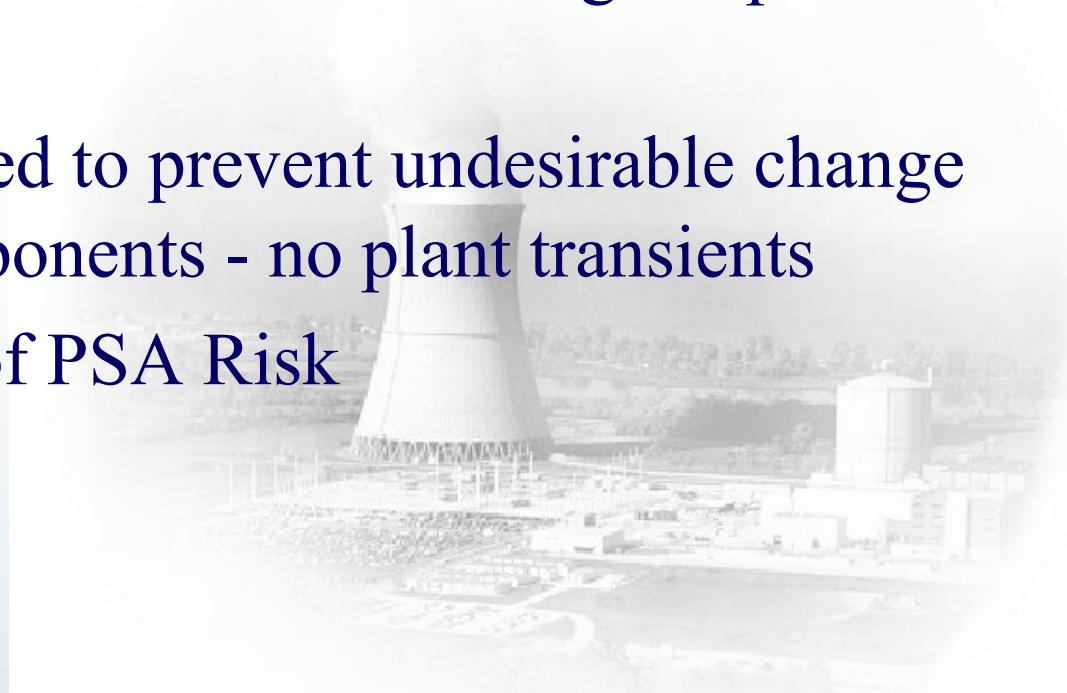
Problem Solving/Decision Making Nuclear Operating Procedure

- Low Significance
 - No personnel or radiological issues
 - Not likely to cause plant damage to components or systems
 - Not likely to effect operations or PSA Risk



Problem Solving/Decision Making Nuclear Operating Procedure

- Medium Significance
 - Potential personnel or radiological concerns
 - Without controls could cause damage to plant equipment
 - Controls required to prevent undesirable change of state of components - no plant transients
 - Re-evaluation of PSA Risk



Problem Solving/Decision Making Nuclear Operating Procedure

- High Significance
 - Without controls could cause damage to critical plant equipment
 - Could result in personnel or radiological safety issues
 - With proper controls will not result in reactor changes, generator runbacks or power reductions



Problem Solving/Decision Making Nuclear Operating Procedure

- Six Principles
 - Conditions are recognized and reported using the Corrective Action Program
 - Roles and responsibilities are clearly established for making and implementing decisions
 - Consequences of operational challenges are clearly defined and rigorously evaluated
 - Establish full understanding of short term and long term risk
 - Develop implementation plans to establish actions, compensatory measures and contingencies
 - Periodic evaluation of activities

Management Observation Program

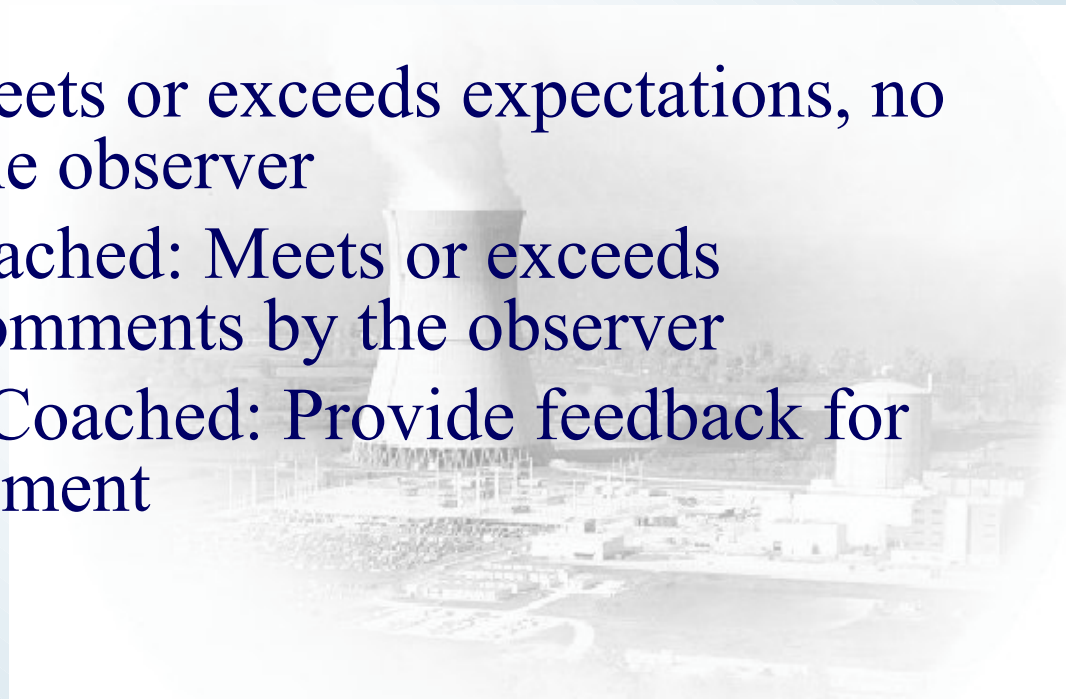


Kathy Fehr

Owner- Management Observation Program

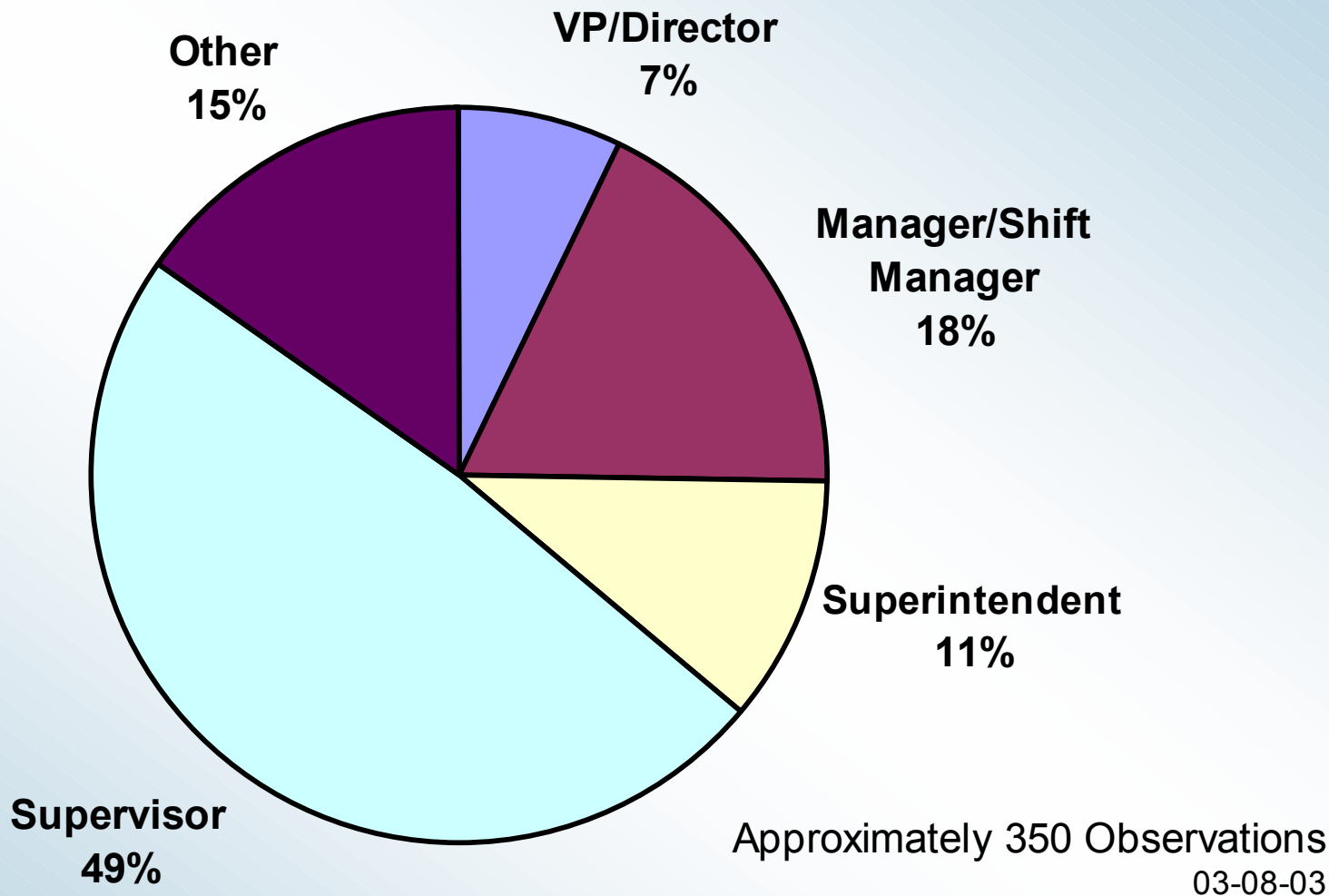
Management Observation Program

- Purpose
 - Management oversight on activities and influence desired behaviors
- Definitions
 - Satisfactory: Meets or exceeds expectations, no comments by the observer
 - Satisfactory Coached: Meets or exceeds expectations, comments by the observer
 - Unsatisfactory Coached: Provide feedback for area of improvement



Observation Percentage by Title

(February 2003)



Management Observation Program

- Total Observations
 - 350 Observations
- Scheduled Observations
 - 90% average for February
- Condition Reports
 - 6.21% of February observations generated condition reports (20)
 - 5.98% for January

Management Observation Program

February Field

- Total Coached: 12.2%
 - 9.4% satisfactory coached
 - 2.8% unsatisfactory coached

January Field

- Total Coached: 10.9%
 - 7.9% satisfactory coached
 - 3% unsatisfactory coached

- Management observations have had a positive effective
- Improvement is needed and ongoing

Quality Oversight

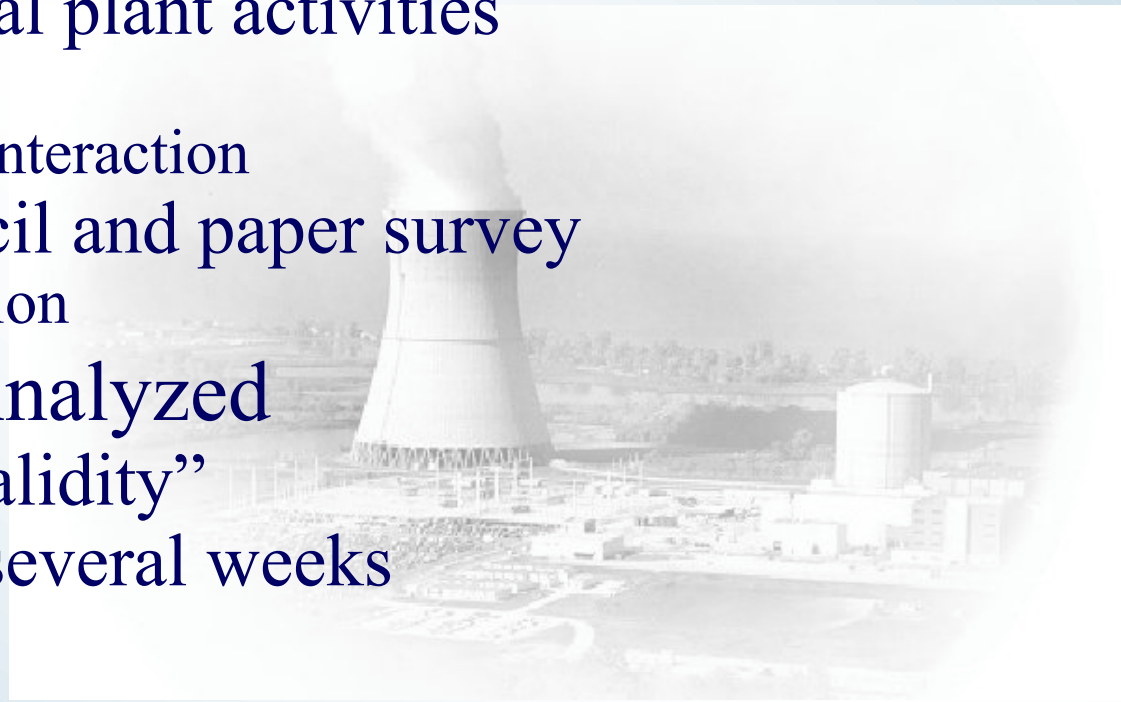


Bill Pearce
Vice President - FENOC Oversight

Quality Oversight

Safety Culture Assessment

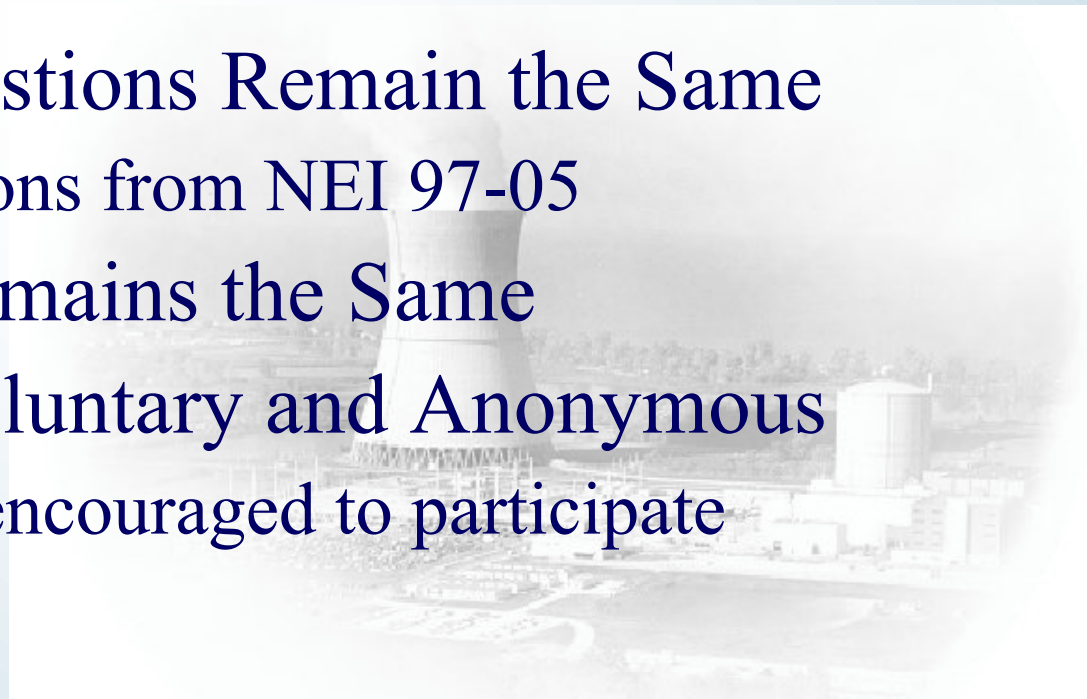
- Activities Completed
 - Interviewed approximately 90 employees
 - Observed normal plant activities
 - Site meetings
 - Departmental interaction
 - Conducted pencil and paper survey
 - 80% participation
- Results Being Analyzed
 - “Convergent Validity”
 - Results within several weeks



Quality Oversight

Safety Conscious Work Environment

- Periodic Survey to be Conducted
 - Week of March 24
- Majority of Questions Remain the Same
 - Includes questions from NEI 97-05
- Rating Scale Remains the Same
- Survey to be Voluntary and Anonymous
 - Site personnel encouraged to participate
- Results in April



Quality Oversight

Quality Assurance Observations

- QA Audit Program Review
 - Areas in Need of Improvement
 - Implementation of commitments
 - Audit checklists
 - Use of Operating Experience in auditing
 - Training/qualification of auditors
 - Escalation of inadequate actions to audit findings
 - Interface issues with American Society of Mechanical Engineers (ASME) QA Program

Quality Oversight

Quality Assurance Observations

- Review Presented to Program Review Board
 - February 10
- Review Board Finding
 - Need for review of ASME QA Audit Program
 - Review Board will re-evaluate Audit Program
 - Completed March 10



Quality Oversight

Quality Assurance Observations

- Oversight of New Reactor Head
- Restart Station Review Board
- Fuel Handling
- In-Service Inspection
- Quality Control
- Contractor Control
- Corrective Action
- Safety Culture
- Feedwater Flow Modification
- Quality of Work



System Health Progress



Bob Schrauder
Director - Support Services

System Health Progress

Collective Significance Reviews

- System Health Assurance Plan Reviews Identified Potentially Cross Cutting Issues
- Initial Collective Significance Review Identified Five Topical Areas Warranting Further Evaluation:
 - Seismic Qualification
 - Station Flooding
 - High Energy Line Break (HELB)
 - Environmental Qualification (EQ)
 - Appendix R Safe Shutdown Analysis

System Health Progress

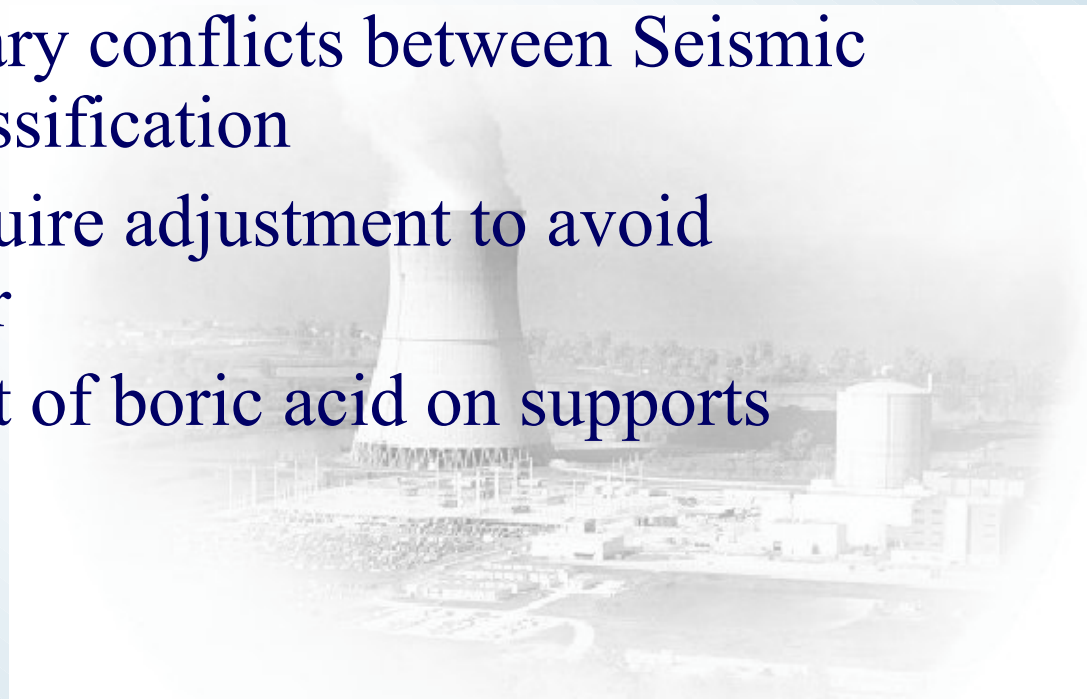
Review Process

- Nuclear Operating Business Practice “Collective Significance Review”
 - Consistent process and format
- Evaluation Process
 - Condition Report (CR) database used to identify population of issues to evaluate
 - Bin CRs into common issues areas
 - Evaluate each issue to determine program significance
 - Conduct extent of condition evaluation where warranted

System Health Progress

Seismic

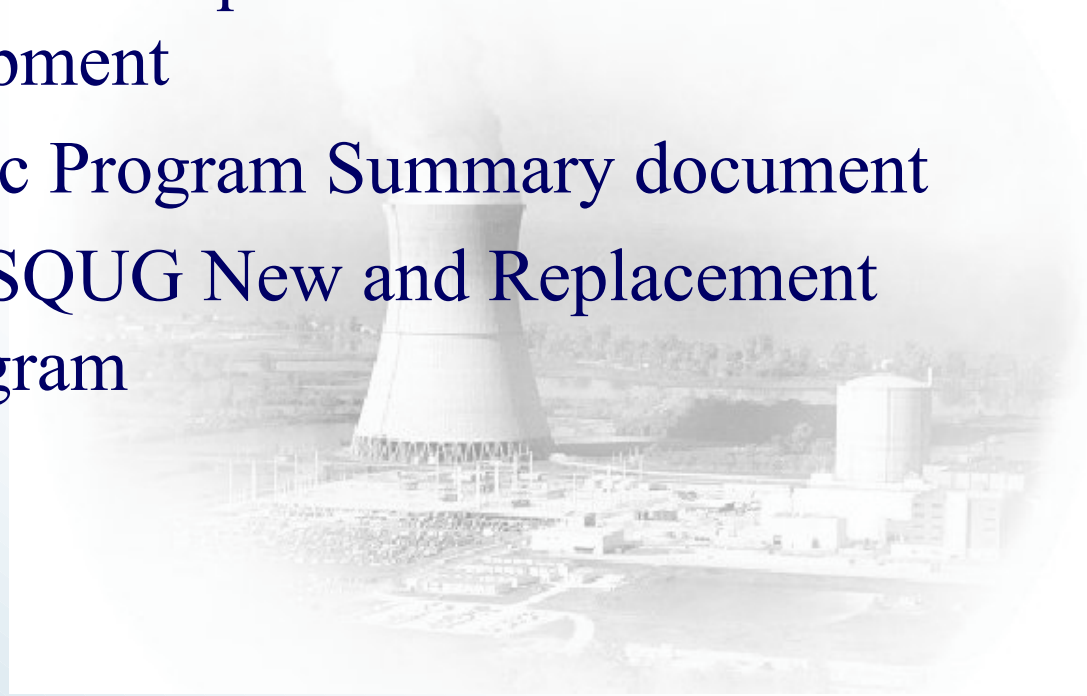
- Actions to Support Restart
 - Evaluate impact of Cooling Tower Makeup pumps not in accordance with USAR
 - Resolve boundary conflicts between Seismic and Quality classification
 - HFA relays require adjustment to avoid potential chatter
 - Evaluate impact of boric acid on supports



System Health Progress

Seismic

- Future Improvements
 - Eliminate confusion on boundary classifications
 - Improve procedural requirements for control of temporary equipment
 - Create a Seismic Program Summary document
 - Implement the SQUG New and Replacement Equipment program



System Health Progress

Station Flooding

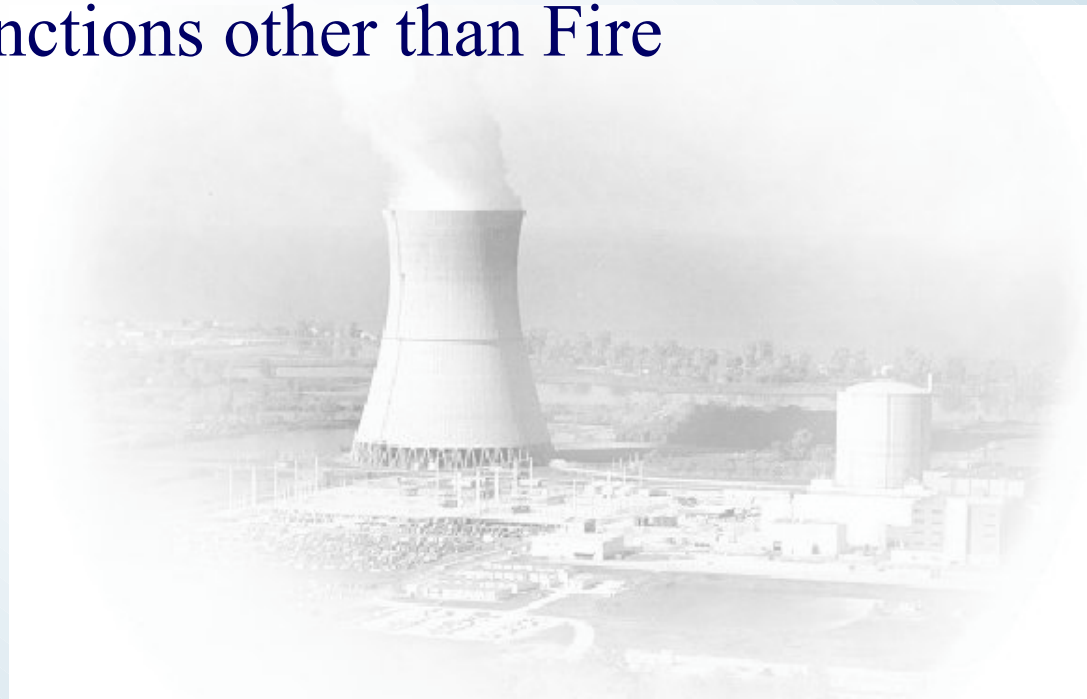
- Actions to Support Restart
 - Assess impact of Cooling Tower Makeup Pump seismic categorization on Service Water System
 - Evaluate impact of flooding service water tunnel on service water isolation valves to turbine building
 - Verify functionality of critical floor drains



System Health Progress

Station Flooding

- Future Improvements
 - Install flood seals in conduit penetrations
 - Implement a formal inspection program for barriers with functions other than Fire Protection



System Health Progress

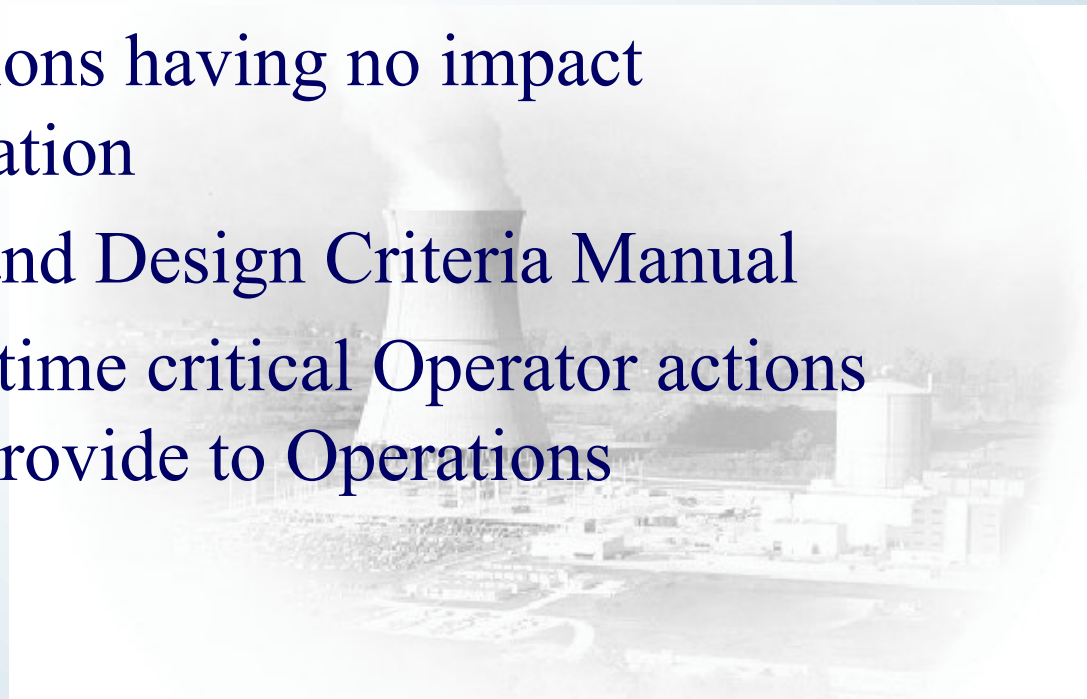
High Energy Line Break

- Actions to Support Restart
 - Complete re-analysis of Turbine Building breaks
 - Revise calculation affecting line breaks/cracks
 - Verify Auxiliary Building free space volumes and openings



System Health Progress High Energy Line Break

- Future Improvements
 - Update model for Auxiliary Building environmental conditions
 - Revise calculations having no impact crack/break location
 - Revise USAR and Design Criteria Manual
 - Compile list of time critical Operator actions and bases and provide to Operations



System Health Progress

Environmental Qualification

- Actions to Support Restart
 - Evaluate environmental effects on EQ equipment due to HELB reanalysis
 - Replace vendor supplied splices with EQ splices in Containment Limitorque actuators
 - Correct Raychem splice bend radius on four level transmitters
 - Replace containment purge inlet isolation solenoid valve due to accelerated thermal aging

System Health Progress

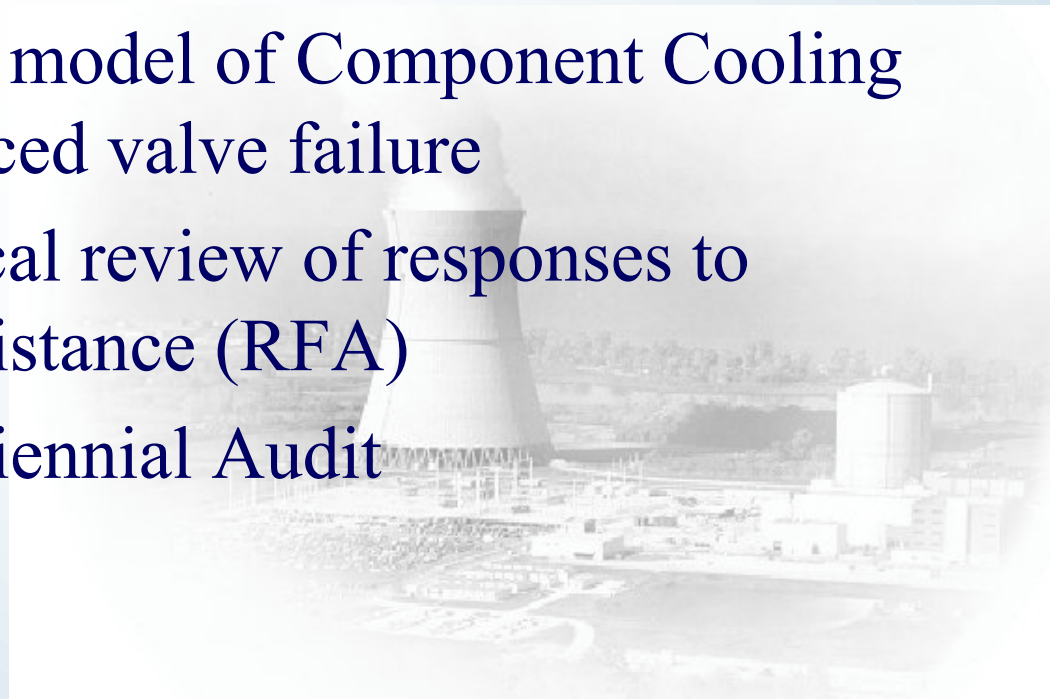
Environmental Qualifications

- Future Improvements
 - Revise guidance documents on installation of Limitorque actuators to ensure installation with qualified splices
 - Provide drainage configurations for containment conduit, as necessary
 - Maintenance Matrix of EQ files will be revised to require weep holes at low points of raceways in containment
 - Revise EQ program to provide guidance on recognizing components needing raceway drainage
 - Develop and conduct EQ refresher training

System Health Progress

Appendix R - Safe Shutdown Analysis

- Actions to Support Restart
 - Complete Framatome transient calculation upgrade project
 - Complete Flow model of Component Cooling Water fire induced valve failure
 - Perform technical review of responses to requests for assistance (RFA)
 - Perform QA Triennial Audit



System Health Progress

Appendix R - Safe Shutdown Analysis

- Future Improvements
 - Formalize informal calculation in Requests for Assistance (RFAs) where necessary
 - Complete safe shutdown procedures upgrade project



Containment Health



Lynn Harder

Containment Health Inspection Project Manager

Containment Health

- Ensuring Equipment Supports Safe and Reliable Plant Operation
- Inspection Procedures for Extent of Condition
 - “As found” conditions documented through Condition Reports
 - Electrical, structural, mechanical
 - More than 500 components inspected
 - 200 Alloy 600 components inspected



Containment Health

- Independent Evaluators Performed Cause Analysis on More Than 950 Condition Reports
 - More than 6,400 Corrective Actions developed to ensure remediation
 - Rework, replace, refurbish, and clean
 - More than 12,000 assets involved



Containment Health



Containment Air Cooler



Core Flood Tank

Containment Health



Plenum Sensing Line



Service Water Piping/Support

Containment Health



Containment Air Cooler
Plenum



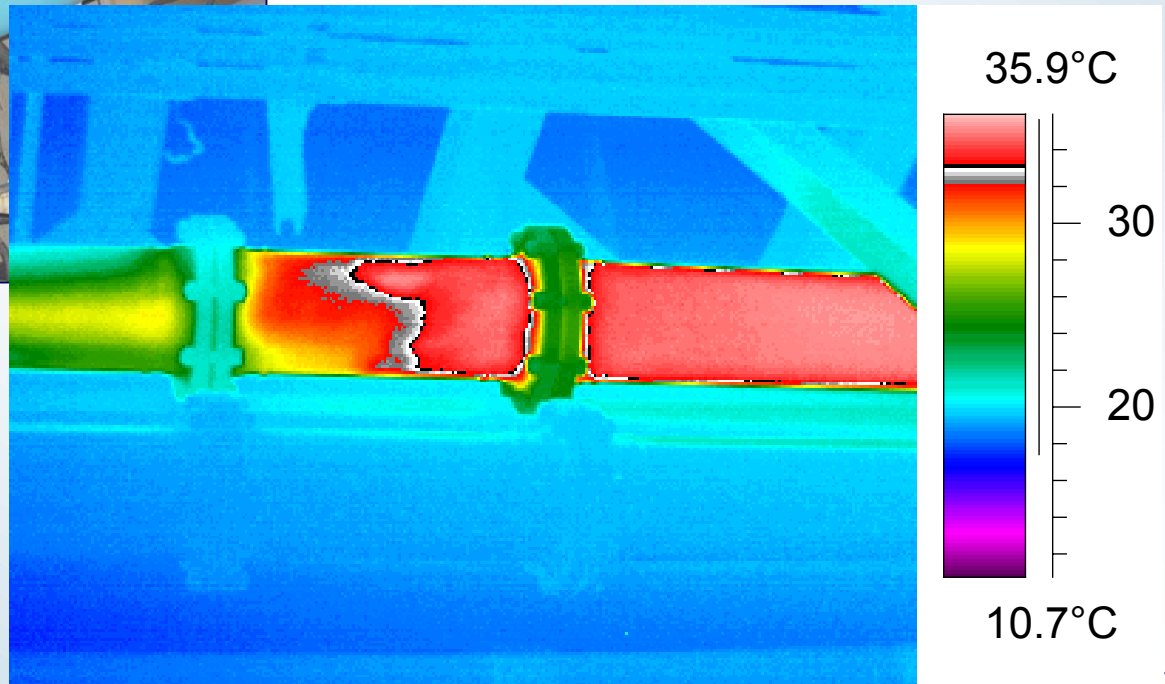
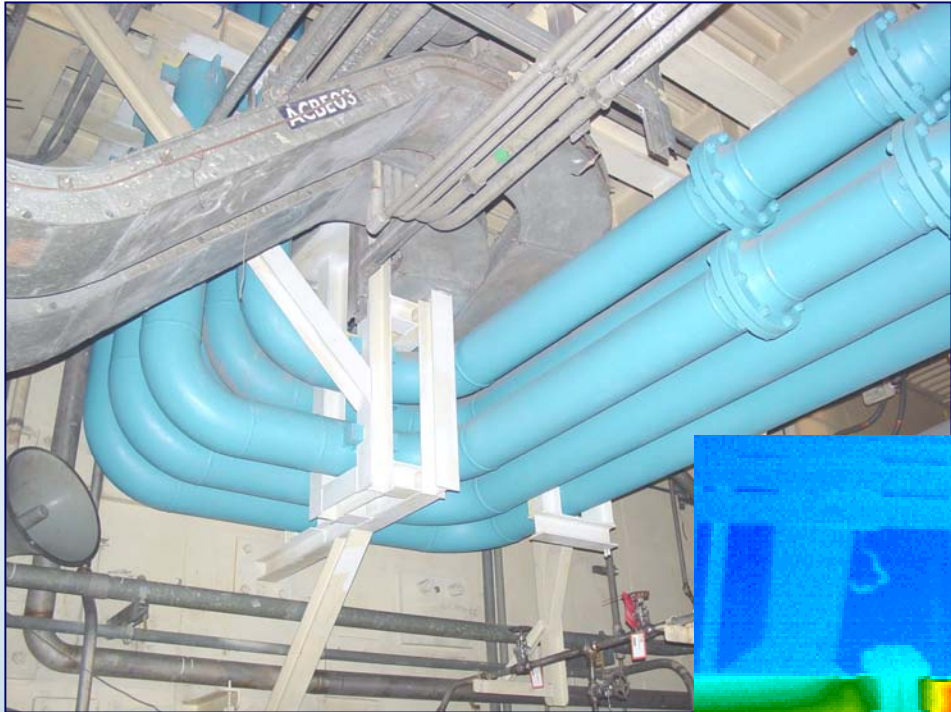
Containment Air Cooler
Service Water Piping

Containment Health



Containment Health

Station Water Piping (left) and
Thermography Shots (below)



Containment Health

- Containment Health Inspection Teams
 - Final “clean-up” of remaining work
- “As Left” Conditions
 - Documented by inspectors after cleaning
 - Assessed by independent evaluators
 - “As left” compared against “as found”
 - Final “as left” inspection
 - Baseline for Boric Acid Corrosion Control Program procedure
 - Provides for a systematic method
- Restart Test Plan
 - Four independent tests verify no Reactor Coolant System leakage

Restart Action Performance



Clark Price Owner - Restart Action Plan

Restart Action Performance

- 0350 Checklist Items
- Restart Action Progress

Restart Action Performance

Item No.	0350 Item Description	Discovery	Implementation
1	Adequacy of Root Cause		
a	Penetration cracking and reactor pressure vessel corrosion	Technical Root Cause 02-0891	
b	Organizational, programmatic and human performance issues	95	
2	Adequacy of Safety Significant Structures, Systems and Components		
a	Reactor Pressure Vessel Head Replacement		97
b	Containment Vessel Restoration following RPV Head Replacement		90
c	Structures, Systems and Components Inside Containment	100	78
c.1	Containment Emergency Sump	100	84
d	Boric Acid in Systems Outside Containment	100	72



Restart Action Performance

Item No.	0350 Item Description	Discovery	Implementation
3	Adequacy of Safety Significant Programs		
a	Corrective Action Program	100	85
b	Operating Experience Program	100	95
c.1	Quality Audits	95	75
c.2	Self-Assessments of Programs		100
d	Boric Acid Corrosion Management Program	100	100
e	Reactor Coolant System Unidentified Leakage Monitoring Program		75
f	In-Service Inspection Program	100	100
g	Modification Program	100	100
h	Radiation Protection Program	100	85
i	Completeness & Accuracy of Required Records & Submittals to NRC		25



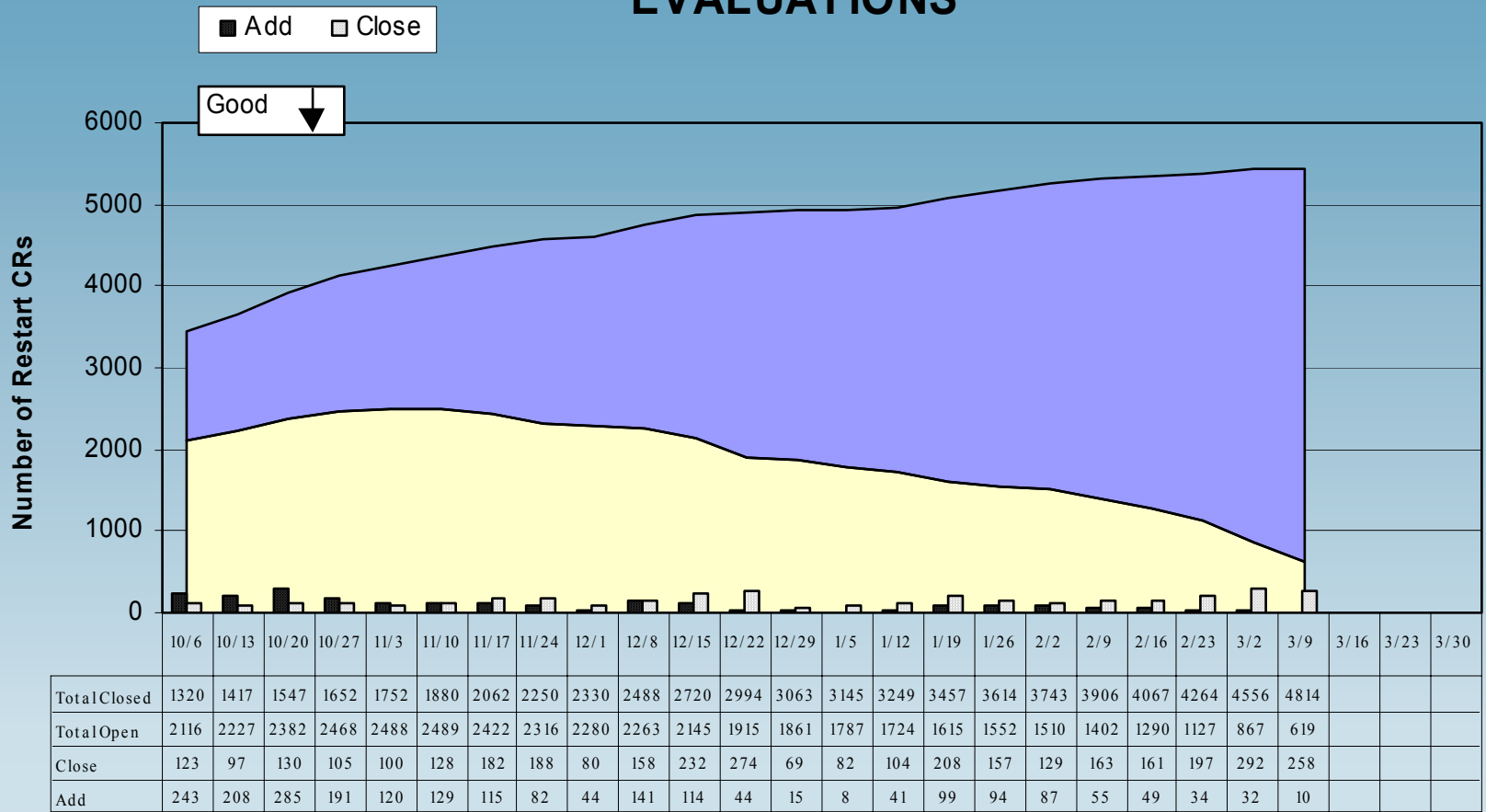
Restart Action Performance

Item No.	0350 Item Description	Discovery	Implementation
4 a-b	Adequacy of Organizational Effectiveness & Human Performance		85
5	Readiness for Restart		
a	Review of Licensee's Restart Action Plan		
b	Systems Readiness for Restart	100	Restart Readiness Reviews
b.1	Design Calculation Resolution	80	Restart Readiness Reviews
c	Operations Readiness for Restart		Restart Readiness Reviews
d	Test Program Development and Implementation		60
6 a-f	Licensing Issue Resolution		100
7 a	Confirmatory Action Letter Resolution		

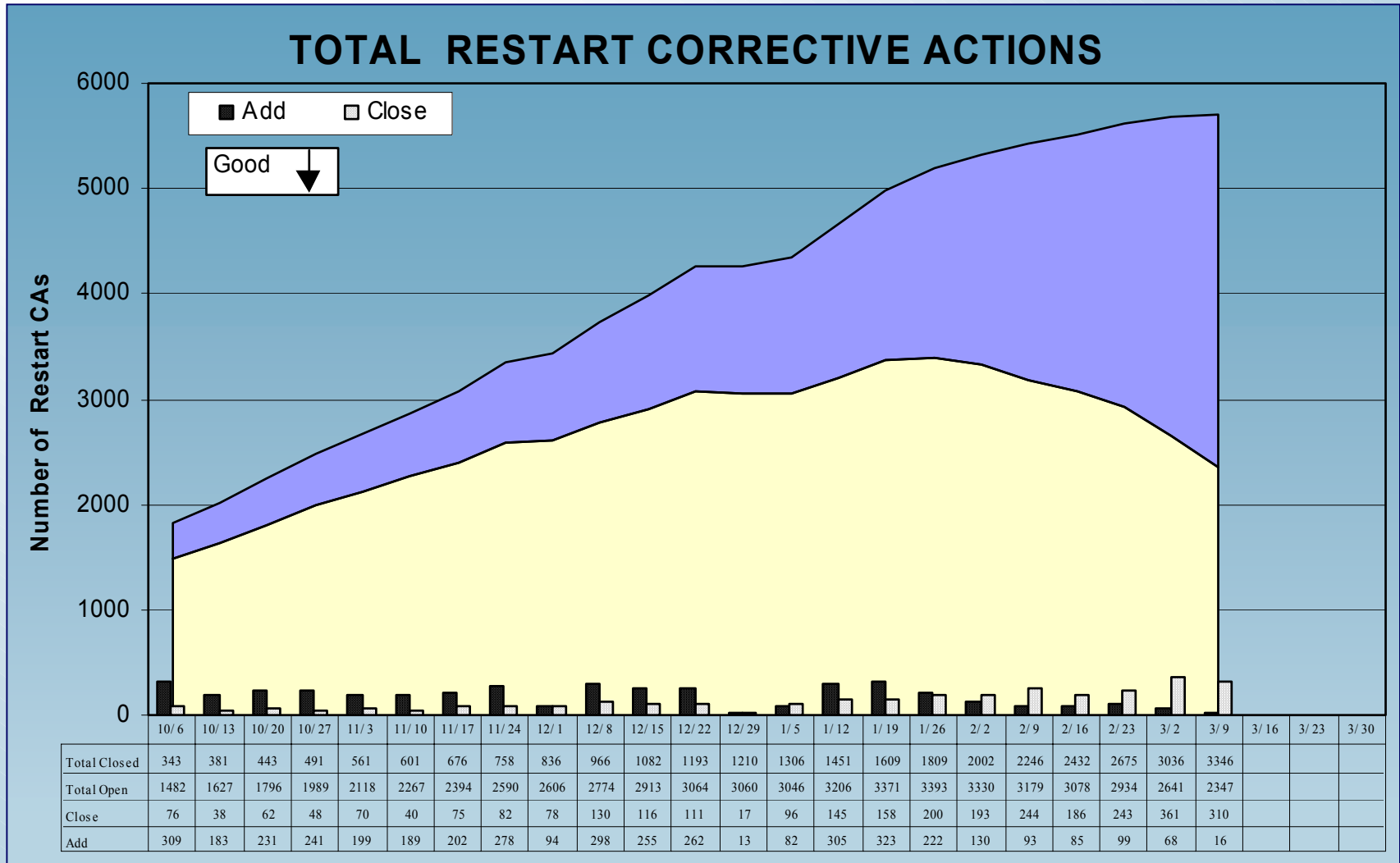


Restart Action Performance

TOTAL RESTART CONDITION REPORT EVALUATIONS



Restart Action Performance



Restart Action Performance

		Restart Work-Off Rates - 4 Week Average				
		Week Ending				
BUILDING BLOCK		9-Feb	16-Feb	23-Feb	2-Mar	9-Mar
CONTAINMENT HEALTH						
	Condition Reports					
	Corrective Actions					
SYSTEM HEALTH						
	Condition Reports					
	Corrective Actions					
PROGRAM COMPLIANCE						
	Condition Reports					
	Corrective Actions					
NON BUILDING BLOCK						
	Condition Reports					
	Corrective Actions					
TOTAL RESTART						
	Condition Reports					
	Corrective Actions					
Work Off Rate Declined from Prior Week						
Work Off Rate Improved from Prior Week						
Work Off Rate Unchanged from Prior Week						

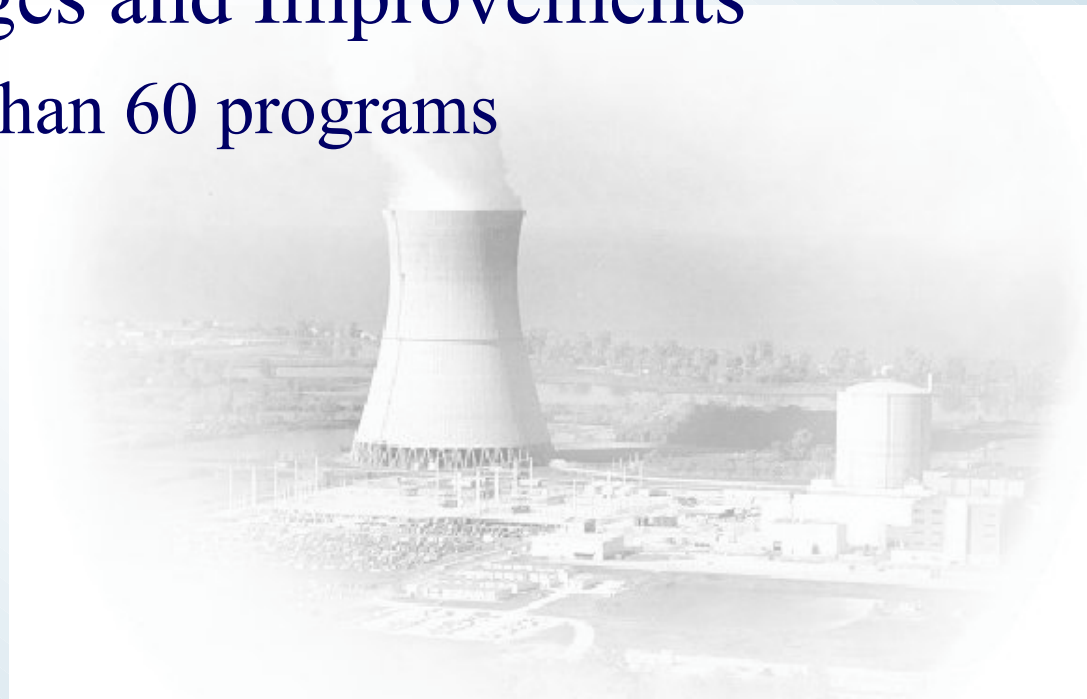
Program Compliance



Jim Powers
Director - Nuclear Engineering

Program Compliance

- Program Review Process Approval
- New Set Point Program Prior to Restart
- Programs Changes and Improvements
 - Involves more than 60 programs

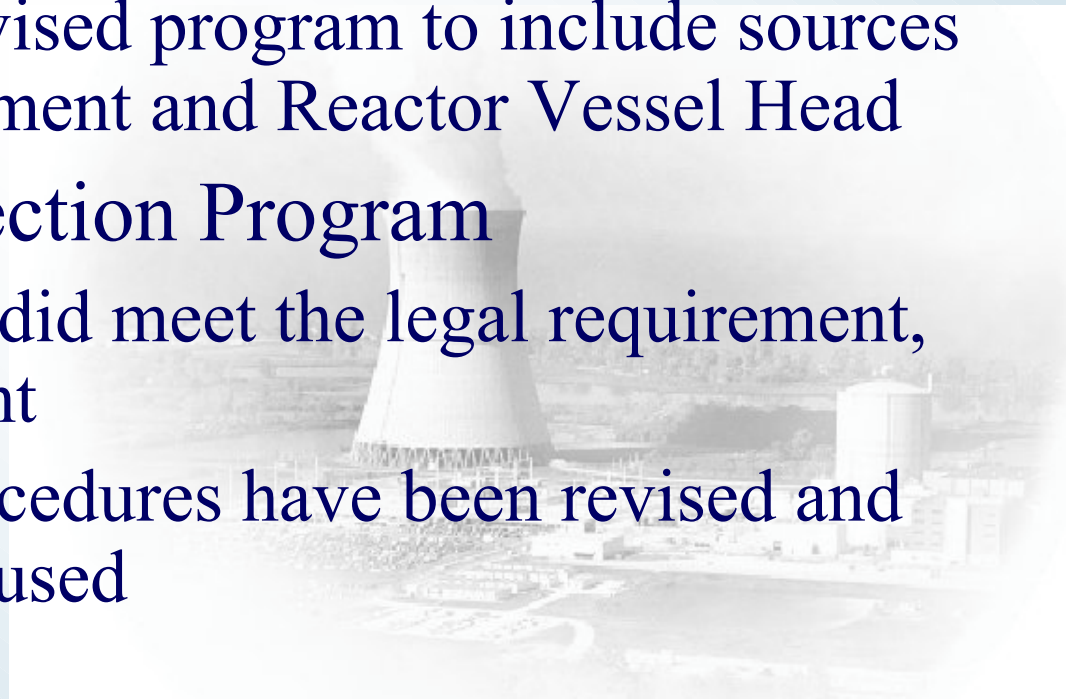


Program Compliance

- Corrective Action Program
 - Issue: Inadequate implementation of the program
 - Resolution: Condition Report Analyst, Corrective Action Review Board improvements, and procedure changes
- Operating Experience (OE)
 - Issue: OE not properly evaluated and incorporated into activities
 - Resolution: Procedure changed to improve process and OE use promoted

Program Compliance

- Boric Acid Corrosion Control
 - Issue: Did not address sources of boric acid outside containment and Reactor Vessel Head
 - Resolution: Revised program to include sources outside containment and Reactor Vessel Head
- In-Service Inspection Program
 - Issue: Program did meet the legal requirement, but not the intent
 - Resolution: Procedures have been revised and personnel refocused



Program Compliance

- Plant Modification Program
 - Issue: Handoff of engineering package activities to planning and field relies on tribal knowledge to function
 - Resolution: Procedures are being developed and revised to address the issues
- Radiation Protection Program
 - Issue: Content of procedures does not contain requirements
 - Resolution: Procedures are being upgraded to incorporate requirements

Upcoming Activities



Greg Dunn

Manager - Outage Management & Work Control

Upcoming Activities

- Restart Milestones
 - Tension Studs/Mode 5
 - Drain Down/Nozzle Dams
 - Reactor Coolant System Fill
 - Integrated Leak Rate Test
 - Emergency Sump Lower Strainer Assembly
 - Containment Air Coolers
 - Mode 4 Restart Readiness Meeting
 - Reactor Pressure Test



Closing Remarks



Lew Myers
Chief Operating Officer - FENOC