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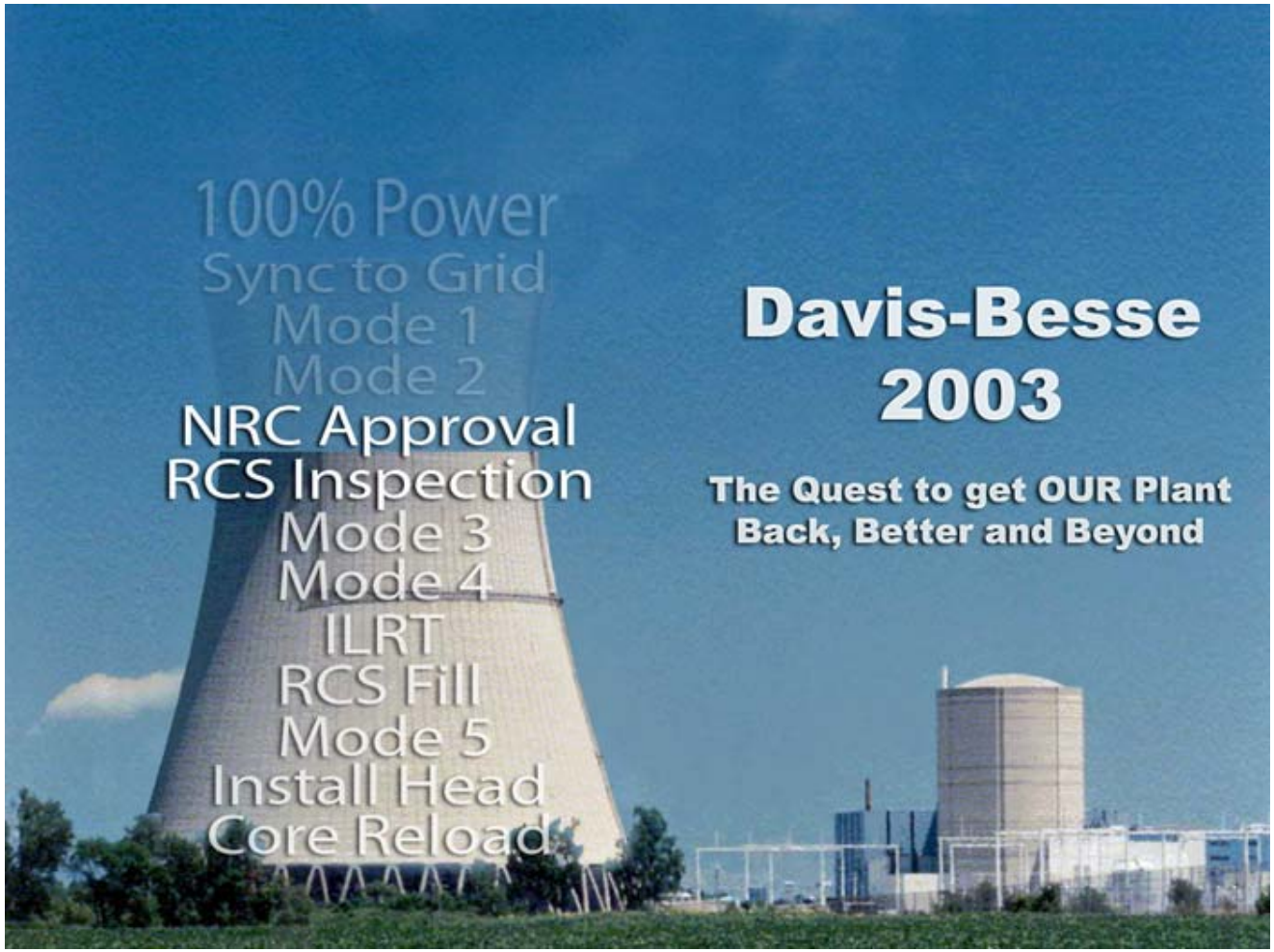
Davis-Besse Nuclear Power Station



IMC 0350 Meeting

Desired Outcomes

- Provide an update of our progress toward restart
- Update key areas for improvement prior to restart
  - -Calculations
  - -Corrective Action Program
  - -Operations Improvement Action Plan

Lew Myers
Chief Operating Officer - FENOC

Meeting Agenda

- Progress Toward Restart……..Lew Myers
- Calculation Improvements... ……..……Jim Powers
- Corrective Action Program Improvements..……Bob Schrauder
- Final NOP Test Conclusions……...Mark Bezilla
- Operations Improvement Action Plan..…… Mike Roder
- NOP Inspection Results……...Craig Hengge
- Station Key Events..……Clark Price

Lew Myers

Chief Operating Officer - FENOC

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Progress Toward Restart

Lew Myers

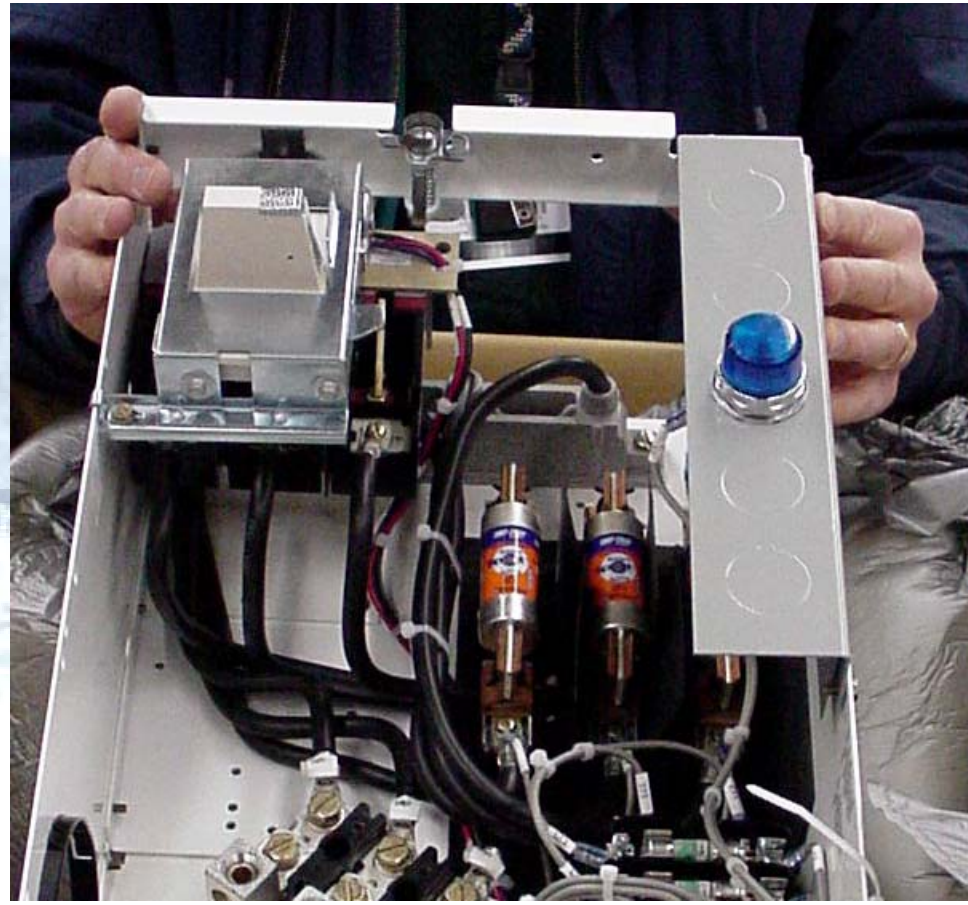
Chief Operating Officer - FENOC

Progress Toward Restart

- Completed four NRC Restart Checklist Items
  - -2.d Extent of Condition of Boric Acid in Systems Outside of Containment
  - -3.c Quality Audits and Self-Assessment of Programs
  - -3.i Completeness and Accuracy of Required Records and Submittals to the NRC
  - -5.a Licensee's Restart Action Plan
- Completed 22 items; 9 remaining

Progress Toward Restart

- Actions completed
  - -Restart Test Plan
  - -High Pressure Injection Pumps #2 installed
  - -Electrical breaker co-ordination modifications underway



Progress Toward Restart

- Actions completed (continued)
  - -Employee alignment training
  - -First all-employee survey on Safety Culture
  - -Safety Conscious Work Environment survey
  - -Management walk-down of open work orders
  - -Restart Overview Panel conditional restart approval
  - -Emergency Preparedness

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Progress Toward Restart

- Items for next ROP meeting
  - -Power Ascension Plan
  - -Electric System Co-ordination Improvement
  - -Service Water Resolution
  - -Containment Air Coolers
  - -High Pressure Injection Pumps
  - -Containment Readiness
  - -Procedure Use and Adherence Training
  - -Operations Improvement Action Plan
  - -Emergency Preparedness at Restart
  - -Cycle 14: Operational Improvement Plan (Engineering and Maintenance Backlog, Equipment Reliability, Engineering Calculations)

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Calculation Improvements

Jim Powers

Director - Engineering

Calculation Improvements

- Calculation Review and Assurance History
  - System Health Assurance Plan Review
    - Safety Function Validation Project (SFVP)
      - Purpose was to provide assurance of the adequacy of the design for plant safety functions
      - Review of systems providing significant contribution to core damage frequency (CDF)
      - Design basis calculations demonstrated safety functions in a majority of cases
      - Calculations improved as required; e.g. ETAP Analysis

Calculation Improvements

- Calculation Process Improvements
  - NOP-CC-3002, Calculations issued March, 2003
  - Procedure change training provided
  - New requirements for Design Interface Evaluation and 50.59
  - Detailed Design Verification checklist included
- Independent assessment by Architect/Engineer (A/E), October, 2003
  - Benchmarked against A/E and large mid-west utility
  - Identified areas for improvement
  - Process and implementation

Calculation Improvements

- Immediate Improvement Actions
  - Design Engineering realignment and reaffirmation meetings
    - Procedure types and adherence expectations
    - Review of A/E assessment results
    - Supervisors
    - Engineers
  - Collective Significance Condition Report issued
    - CATI and A/E issues included
    - Each unit reviewed their issues
    - Assessed affects on results or conclusions
    - Corrective Actions for Case Study and Model Calculations

Calculation Improvements

- Immediate Improvement Actions (continued)
  - Engineering Assessment Board Calculation Review
    - Detailed review using checklist
    - Specific objectives developed
    - Calculation quality Performance Indicator
  - Requirement to validate older calculations prior to use
  - Approved funding for electronic calculation index and ATLAS Electronic Design Basis Information Projects
    - Initiated both projects
    - Design control improvements

Calculation Improvements

- Calculation Improvement Plan
  - Operational Improvement Plan initiation
  - Details in Design Basis Assessment Report
  - Procedure improvements
  - Implementation performance improvement
  - Critical (Tier 1) calculation meet high quality standards

Calculation Improvements

- Summary
  - System Health Building Block reviews completed
  - System Design Bases support restart
  - Barriers to ensure calculations quality are in place
  - Continued improvements ongoing

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Corrective Action Program Improvements

Bob Schrauder

Director - Support Services

Corrective Action Program Improvements

- Apparent Cause Quality
  - Corrective Action Review Board (CARB) review
  - Enhanced procedural requirements
  - Select group of Apparent Cause Evaluators
  - Established Qualifications
    - Initial training
    - Continued training
    - Proficiency requirements
  - Condition Report Analysts
    - Strengthened roles and responsibilities
    - Attendance at CARB
    - Long-tem responsibility for quality

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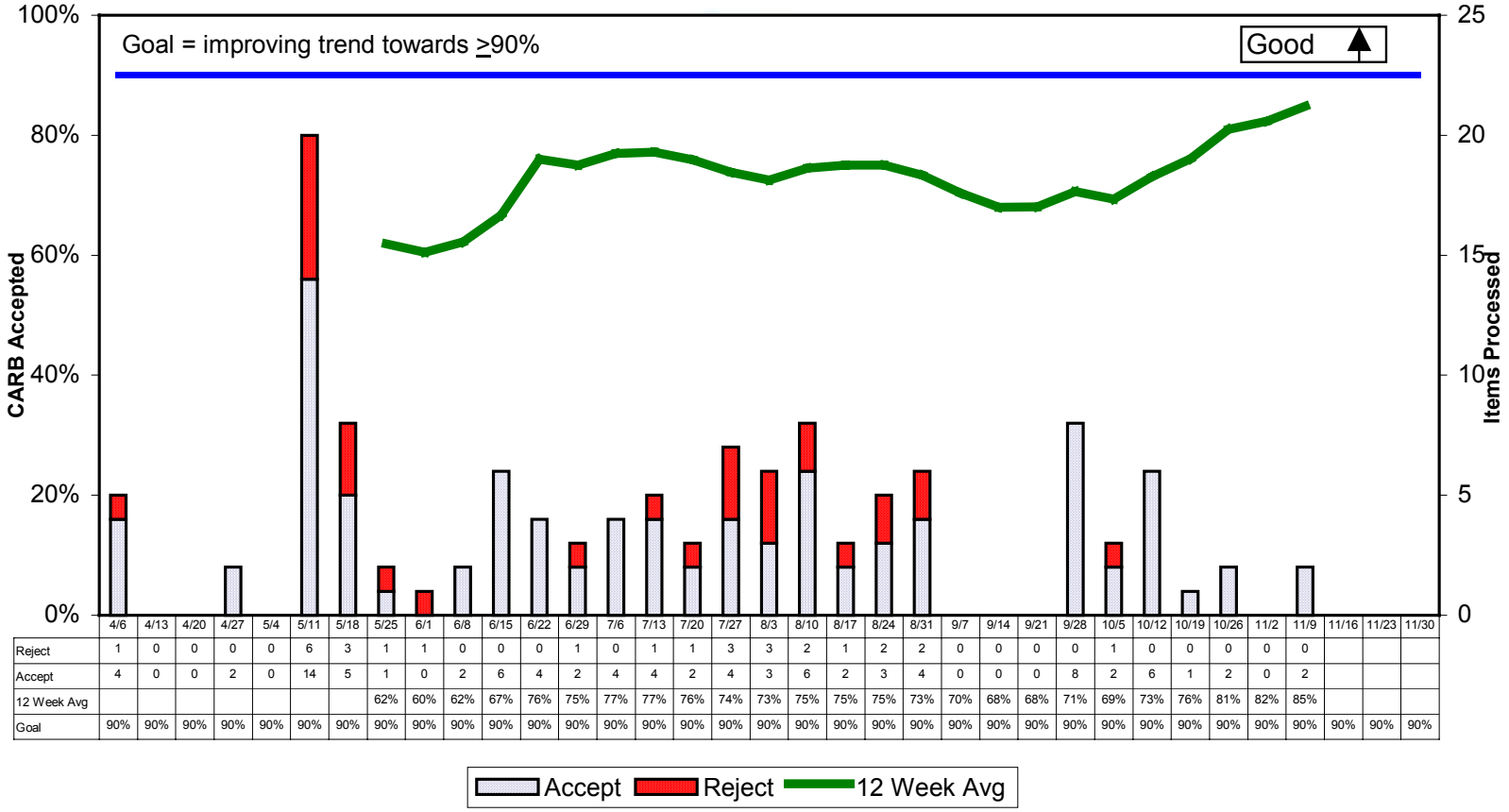
Corrective Action Program Improvements

DAVIS-BESSE NUCLEAR POWER STATION

CORRECTIVE ACTION PROGRAM

APPARENT CAUSE EVALUATION QUALITY



	4/6	4/13	4/20	4/27	5/4	5/11	5/18	5/25	6/1	6/8	6/15	6/22	6/29	7/6	7/13	7/20	7/27	8/3	8/10	8/17	8/24	8/31	9/7	9/14	9/21	9/28	10/5	10/12	10/19	10/26	11/2	11/9	11/16	11/23	11/30
Reject	1	0	0	0	0	6	3	1	1	0	0	0	1	0	1	1	3	3	2	1	2	2	0	0	0	0	1	0	0	0	0	0			
Accept	4	0	0	2	0	14	5	1	0	2	6	4	2	4	4	2	4	3	6	2	3	4	0	0	0	8	2	6	1	2	0	2			
12 Week Avg								62%	60%	62%	67%	76%	75%	77%	77%	76%	74%	73%	75%	75%	75%	73%	70%	68%	68%	71%	69%	73%	76%	81%	82%	85%			
Goal	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%

Corrective Action Program Improvements

- Documentation quality
  - Requirements added to procedure
  - Lessons learned training
  - Condition Report Analyst review
  - Performance Improvement Unit reviews

Corrective Action Program Improvements

- Management involvement
  - Business Practice for implementation expectations
  - Reinstated Management Communication and Teamwork Meeting
  - Section Manager at CARB for Sections Apparent Causes
  - Manager review of all open Condition Reports
  - Senior Leadership Team review of Significant Conditions Adverse to Quality (SCAQs)
  - Executive leadership review of SCAQs as selected by COO
  - Company Nuclear Review Board independent review of selected Apparent Causes

Corrective Action Program Improvements

- Trending
  - Quarterly Trend Summary Reports resumed
  - System Health Reports resumed
  - FENOC Manager of Equipment Reliability
  - CREST Statistical Process Control interface created
  - Section assessments planned

Corrective Action Program Improvements

- Summary
  - FENOC has a good Corrective Action Program
  - Implementation of the Corrective Action Program at Davis-Besse is improving
- Actions Taken to Assure Restart Readiness
  - On-going CARB review of Condition Reports with specific criteria
  - Increased management involvement in process
  - Select qualified Apparent Cause Evaluators
  - Provide training and strengthen roles and responsibilities of CR analysts
  - CNRB independent review of Apparent Causes

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Normal Operating Pressure Test
Conclusions

Mark Bezilla
Vice President

Overall NOP Test Conclusions

- Desired Outcome
  - Provide you with our conclusions of the 7 Day RCS Integrity Test (Nuclear Operating Pressure (NOP) Test)
    - Conduct walkdowns of systems
    - Inspect RCS Leakage
    - Validate New RCS Leakage Procedure/ FLÜS Leak Monitoring System
    - Correct identified problems
    - Goal of achieving Lowest Attainable RCS Leakage
    - Completion of Post-Maintenance Test Matrix
    - Operational Readiness Assessment
      - Organization Structure
      - Management Effectiveness
      - Operations Effectiveness

Overall NOP Test Conclusions

- NOP Test successfully accomplished the stated objectives
  - Areas for improvement were identified

No leakage on incore nozzles (bottom of reactor vessel)

Overall NOP Test Conclusions

- Plant
  - –Integrity of the Reactor Coolant System was verified
  - –Sensitivity of the RCS Leakage Monitoring System was confirmed
  - –Sensitivity of the FLÜS Leak Monitoring System was confirmed

No leakage noted on CRDM nozzles

Overall NOP Test Conclusions

- People
  - Predominately exhibited the characteristic and attitude which established an overriding priority towards nuclear safety activities and ensured that issues received the attention warranted by their significance
  - Our assessments were critical of our performance
  - Identified our shortfalls and areas for improvement

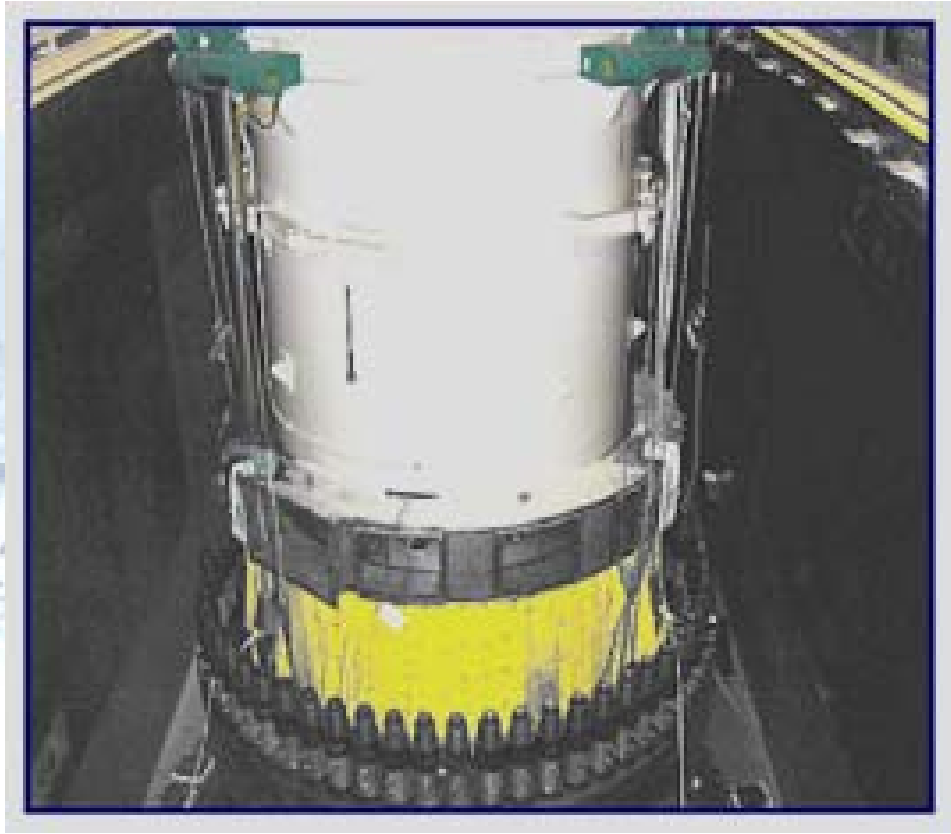
Employee alignment training

Overall NOP Test Conclusions

- Processes
  - Support safe and reliable plant operation
  - Identified areas for improvement

Overall NOP Test Conclusions

- Conclusion
  - –NOP Test was a success
  - –Areas for improvement identified
  - –Operations Improvement Action Plan established



Overall leak rate of RCS was best in the history of plant

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Operations Improvement Action Plan

Mike Roder

Manager - Plant Operations

Collective Significance Review

- Established team
- Reviewed Condition Reports
- Reviewed observation data base
- Reviewed training records
- Five Areas of Improvement
  - Operations oversight and leadership
  - Transition to operational focus
  - Implementation of standards and expectations
  - Strengthen knowledge and skills
  - Improvements in Condition Report investigation

Operations Improvement Action Plan

- Operations Improvement Action Plan
  - Collective Significance
  - Industry reviews
  - Operational Readiness Assessment report
  - Nuclear Quality Assurance Assessment
- Designed to address four key barriers
  - Individual Barriers
  - Program/Process Barriers
  - Management Barriers
  - Oversight Barriers

Operations Improvement Action Plan

- Individual Barrier Improvements
  - Strengthen crew manning
  - Assessed understanding of expectations
  - Evaluated standards and expectations for improvements
  - Reinforcing procedure adherence expectations
  - Targeting training on integrated operations procedures

Operations Improvement Action Plan

- Program and Procedure Barrier Improvements
  - Strengthen procedures
    - Benchmarked against industry leaders
    - Incorporated lessons learned
    - Validated on simulator
    - Focusing on consistent performance
  - Improved pre-job briefs
  - Used Systematic Approach to Training to improve knowledge and skills

Operations Improvement Action Plan

- Management Barrier Improvements
  - Reinforced adherence to on-shift roles
  - Reduced Operations work hours
  - Train Site Managers to achieve more critical observations
- Oversight Barrier Improvements
  - Operational Oversight Managers

Operations Improvement Action Plan

- Effectiveness Measures
  - Successful requalification of Operators
  - Consistent demonstration of proficiency with plant startup, power Operations, abnormal operating and alarm conditions during training
  - Operational Oversight Managers qualitative assessment

Operations Improvement Action Plan

- Summary
  - Upon completion of the Operational Improvement Action Plan, we will be ready for restart

NOP Inspection Results

Craig Hengge

Engineer - Plant Engineering

Vessel Inspections

- Reactor Vessel Inspections Completed
  - Incore Nozzle Inspection
  - CRDM Flange Inspection
  - Bare Head Inspection

Vessel Inspections

- Incore Nozzle Inspection
  - May 2003 post-cleaning baseline inspection
  - October 2003 post-NOP test inspection
    - No indication of leakage
    - No visible residue at any nozzle penetration
    - No detectable changes between inspections

Vessel Inspections

- CRDM Flange Inspection Results
  - CCW drips found on stator cooling connection
  - Boron found on nameplates and vent ports
  - No CRDM flange leakage identified

Vessel Inspections

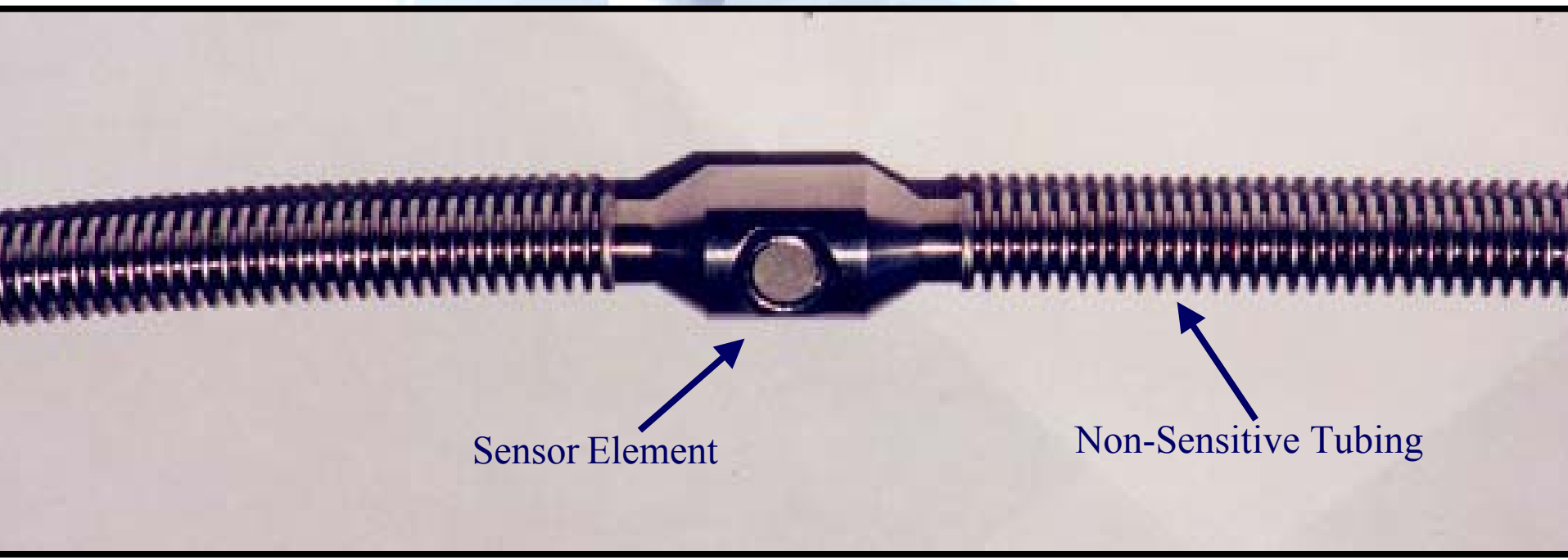
- Bare Head Inspection Results
  - Small particles stuck in nozzle annulus
  - Rust trail traced to CCW drips
  - White streaks on two nozzles from CCW leak
  - No indications of RCS leakage

Bare Head Inspection

Bare Head Inspection

FLÜS Leak Monitoring System

- FLÜS Leak Monitoring System
  - First Installation in United States
  - State-of-the-Art System



Station Key Events

Clark Price

Owner - Restart Action Plan

Station Key Events

Nov 13/14 - Mode 4/3 Restart Readiness Review Meetings
- Safety Culture Assessment

Nov 18 - Mode 4/3 Restart Readiness Review Meeting
- Systems Readiness Assessment

Nov 20 - Company Nuclear Review Board
- Assessment of Restart Readiness

Nov 24 - Submittal of the Integrated Restart Report to NRC

Station Key Events

Dec 1 - Transition to On-Line Work Control Schedule

Dec 1-5 - Industry Review Team

- Restart Readiness Assessment

Dec 1/4 - Mode 4/3 Restart Readiness Review Meetings

- Organizational Readiness
- Operations Improvement Action Plan Effectiveness w/ Feedback from the On-shift Oversight
- Readiness for Restart Overview Panel Action Items

Dec 3 - December 0350 Public Meeting

Station Key Events

Dec 5 - Restart Overview Panel

- Final Restart Readiness Assessment

Dec 8 - NRC Restart Assessment Team arrives for on-shift inspection of Mode Ascension

Dec 9 - Enter Mode 4

Dec 10 - Enter Mode 3

Dec 11 - Achieve Full Reactor Coolant System Pressure and Temperature

Station Key Events

Dec 11/12 - Mode 2 Restart Readiness Review Meetings

- Organizational Readiness
- Operations Improvement Action Plan Effectiveness w/ Feedback from the On-shift Oversight
- On-Line Work Control Effectiveness
- Procedure Use & Adherence Effectiveness
- Corrective Action Program Effectiveness
- Final Plant Systems Readiness

Station Key Events

- Public Meeting for Request for Restart
- Enter Mode 2 (Restart)
- Enter Mode 1
- 65% Hold for Effectiveness Review
- 100% Power
- Post Restart Integrated Test Plan Critique

Closing Comments

Lew Myers
Chief Operating Officer - FENOC