U.S. NUCLEAR REGULATORY COMMISSION

REGION III

REPORT NOS. 50-237/249/96007(DRS); 50-254/265/96007(DRS)

EA NOS. 96-114; 96-115

FACILITIES

Dresden Nuclear Station, Units 2 and 3
Quad Cities Nuclear Station, Units 1 and 2
License Nos. DPR-19; DPR-25; DPR-29; DPR-30

LICENSEE

Commonwealth Edison Company
Opus West III
Downers Grove, IL 60515

MEETING

Predecisional Enforcement Conference
May 1, 1996
Region III Office
801 Warrenville Road
Lisle, Il 60532-4351

DATES OF ORIGINAL INSPECTION

February 14 through April 1, 1996

INSPECTORS

G. Hausman, Lead Engineer
D. Hills, Lead Engineer

APPROVED BY

D. E. Hills for
M. A. Ring, Chief
Lead Engineers Branch

5-10-96
Date

MEETING SUMMARY

Apparent violations identified during the inspection were discussed, along with the corrective actions taken or planned by the licensee. The apparent violations involved a failure to (1) provide adequate design controls to maintain the low pressure coolant injection corner rooms' structural steel design margins (Dresden and Quad Cities) and reactor protection system single failure vulnerability requirements (Dresden only); (2) take corrective actions to address the previously identified potential for several years following your identification of these nonconforming conditions; and (3) submit licensee event reports for these conditions, which were outside the design basis of the plant.

INSPECTION DETAILS

1. Persons Present at Conference

ComEd

R. Baumer, Regulatory Assurance, Quad Cities
T. Best, Site Engineering, LaSalle
N. Chrissotimos, Regulatory Assurance Supervisor, Quad Cities
S. Elderidge, Design Engineering Supervisor, Quad Cities
D. Farrar, Corporate Nuclear Licensing, Downers Grove
R. Gavankar, Chief Mechanical Structural Engineering, Downers Grove
J. Hosmer, Engineering Vice President, Downers Grove
I. Johnson, Corporate Nuclear Licensing, Downers Grove
E. Kraft, Site Vice President, Quad Cities
R. Kundalkar, Site Engineering Manager, Dresden
F. Lentine, Manager Analysis & Design Engineering, Downers Grove
T. Loch, Lead Structural Engineer, Dresden
S. Perry, Site Vice President, Dresden
R. Rybak, Corporate Nuclear Licensing, Downers Grove
F. Spangenberg, Regulatory Assurance Manager, Dresden
R. Temple, Staff Attorney, Downers Grove
T. Thorsell, Chief Electrical I&C Engineering, Downers Grove
D. Tubbs, Senior Engineer - Nuclear, MidAmerican Energy
J. Williams, Assistant Plant Engineering Supervisor, Dresden

U. S. Nuclear Regulatory Commission

A. B. Beach, Deputy Regional Administrator, RIII
B. Burgess, Enforcement Officer, RIII
R. Capra, Director, Project Directorate III-1, NRR
B. Clayton, Chief, Projects Branch 5, DRP, RIII
G. Grant, Director, DRS, RIII
J. Grobe, Deputy Director, DRS, RIII
J. Guzman, Lead Engineer, RIII
G. Hausman, Lead Engineer, Quad Cities, RIII
P. Hiland, Chief, Projects Branch 1, DRP, RIII
D. Hills, Lead Engineer, Dresden, RIII
N. Howey, Assistant Office Manager, IDNS
R. Landsman, Project Engineer, Quad Cities, RIII
H. Miller, Regional Administrator, RIII
G. Norris, Enforcement Specialist, Office of Enforcement
C. Pederson, Director, DNMS, RIII
P. Pelke, Enforcement Specialist, RIII
M. Ring, Chief, Lead Engineers Branch, DRS, RIII
J. Stang, Project Manager, NRR

2. Predecisional Enforcement Conference

A Predecisional Enforcement Conference was held in the NRC Region III Office on May 1, 1996. Three apparent violations of NRC regulations were discussed. The inspection findings were documented in Inspection Report Nos. 50-237/239/96005(DRS) and 50-254/265/96005(DRS), which were transmitted to the licensee by letter dated April 11, 1996.

The purpose of this conference was to discuss the apparent violations, root causes, contributing factors, and the licensee's corrective actions.

The licensee's presentation included a discussion of the apparent violations, their safety significance, the circumstances which caused the apparent violations, and an outline of corrective actions taken or planned.

The NRC representatives questioned the licensee to clarify the extent of the licensee's investigation and corrective actions.

A copy of the NRC slides and licensee's handouts used during the presentation are attached to this report.

Attachments: 1. NRC Presentation
2. ComEd Presentation

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

COMMONWEALTH EDISON COMPANY
DRESDEN NUCLEAR STATION
QUAD CITIES NUCLEAR STATION

ENFORCEMENT CONFERENCE

MAY 1, 1996
10:00 A.M. (CDT)

REPORT NOS. 50-237/249-96005
REPORT NOS. 50-254/265-96005

EA 96-114
EA 96-115

REGION III OFFICE
801 WARRENVILLE ROAD
LISLE, ILLINOIS

DRESDEN AND QUAD CITIES STRUCTURAL STEEL CHRONOLOGY

DATE	DESCRIPTION
Prior to 1991	Contractor modifications to LPCI corner rooms' structural steel cause FSAR design stress levels to be exceeded.
1991	Structural steel problem identified at Dresden and Quad Cities.
	○ Quad Cities prepares DCN to reinforce some Unit 2 beams.
1994	Dresden operability evaluation written to address structural steel problem.
	○ D3R13 outage.
1995	D2R14 outage.
	○ Quad Cities operability evaluation written to address structural steel problem.
	○ Dresden BRC approves modifications to be completed subsequent to D2R14.
2/96	NRC identifies untimely corrective action.
	○ Quad Cities commences modifications during Q1R14.
3/96	Dresden performs modifications during D2R14.

DRESDEN
RPS VULNERABILITY
CHRONOLOGY

DATE	DESCRIPTION
1975	Modification to add scram pilot valve solenoid indicating lights caused vulnerability to single failure.
12/93	Specific problem identified in General Electric 10CFR21 report. Operability evaluation written to address problem.
2/96	NRC identified untimely corrective actions.

- Missed opportunity to install during D3R13.
- Minor modification not scheduled for current Unit 2 outage. Scheduled for next refueling outage.
- Decision made to perform modifications during ongoing Unit 2 refuel outage D2R14.

APPARENT DESIGN CONTROL VIOLATION

10CFR50, App B, Criterion III requires specification of appropriate quality standards and control of deviations from such standards.

Contrary to the above, inadequate design control resulted in uncontrolled deviations from appropriate standards for:

- **Contractor modifications of Dresden and Quad Cities, which caused the LPCI corner rooms' structural steel to exceed FSAR allowable stress levels.**

- **A single failure vulnerability at Dresden, which could simultaneously prevent multiple control rod groups from scramming.**

APPARENT CORRECTIVE ACTION VIOLATION

10CFR50, App. B, Criterion XVI requires prompt identification and correction of conditions adverse to quality are promptly.

Contrary to the above, conditions adverse to quality were not promptly corrected for:

- **Uncontrolled load additions to the Dresden and Quad Cities LPCI corner rooms' structural steel, which exceeded FSAR allowable stress levels.**

- **A single failure vulnerability at Dresden, which could simultaneously prevent multiple control rod groups from scramming.**

APPARENT REPORTING VIOLATION

10CFR50.73(a)(2)(ii) requires an LER be submitted for any condition outside the design basis of the plant.

Contrary to the above, an LER was not submitted for conditions outside the design basis of the plant for:

- **Uncontrolled load additions to the Dresden and Quad Cities LPCI corner rooms' structural steel, which exceeded FSAR allowable stress levels.**

- **A single failure vulnerability at Dresden, which could simultaneously prevent multiple control rod groups from scramming.**

COMED

DRESDEN AND QUAD CITIES STATIONS

PREDECISIONAL MEETING CORNER ROOM STEEL AND REACTOR PROTECTION SYSTEM

MAY 1, 1996

AGENDA

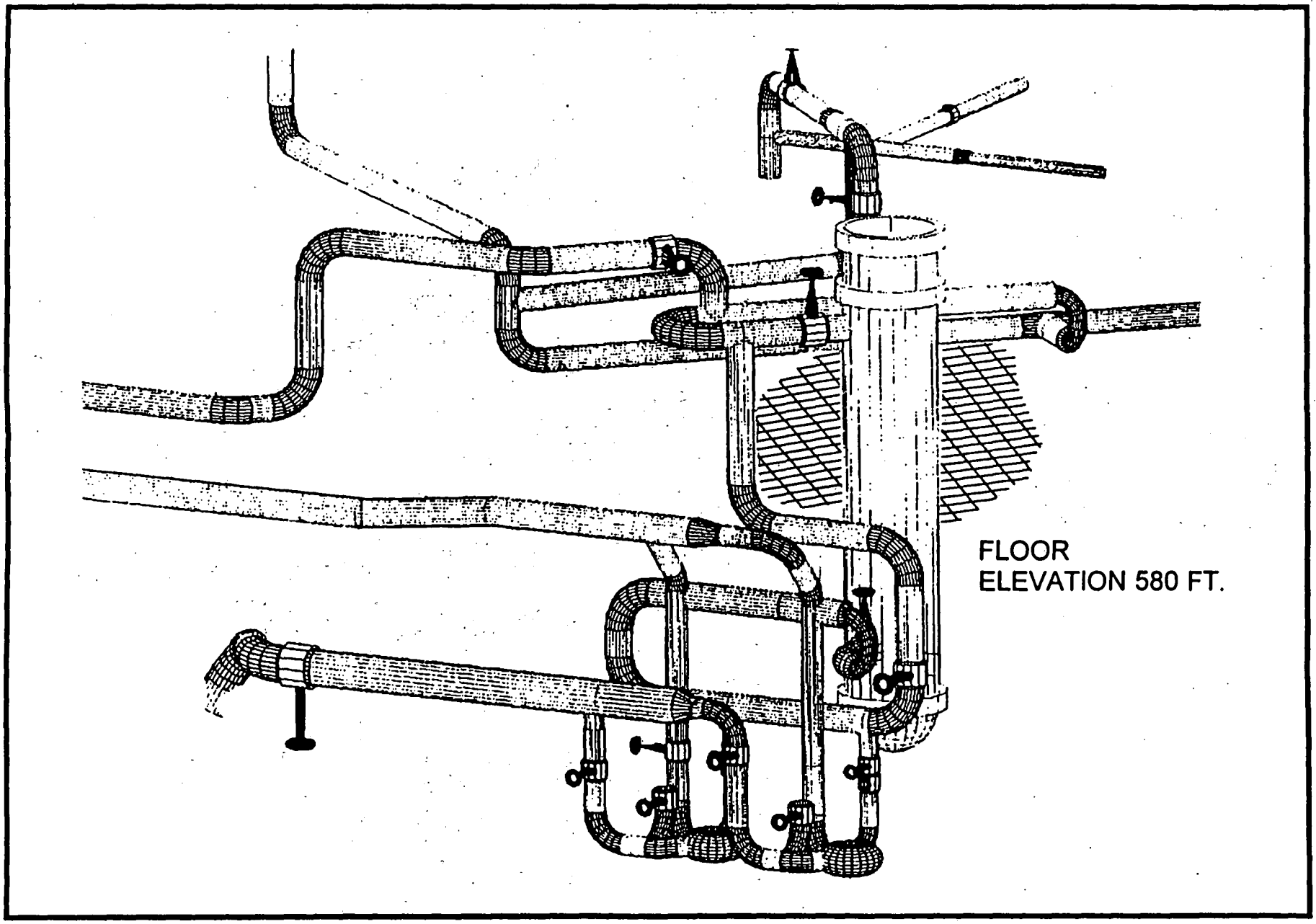
I.	INTRODUCTION	KRAFT/PERRY
II.	CORNER ROOM	
	STEEL	GAVANKAR
	DRESDEN	WILLIAMS
	QUAD CITIES	ELDRIDGE
III.	RPS - DRESDEN	WILLIAMS
IV.	ROOT CAUSES & CORRECTIVE ACTION ANALYSIS	HOSMER

CORNER ROOM STEEL
DRESDEN 2 & 3 AND
QUAD CITIES 1 & 2

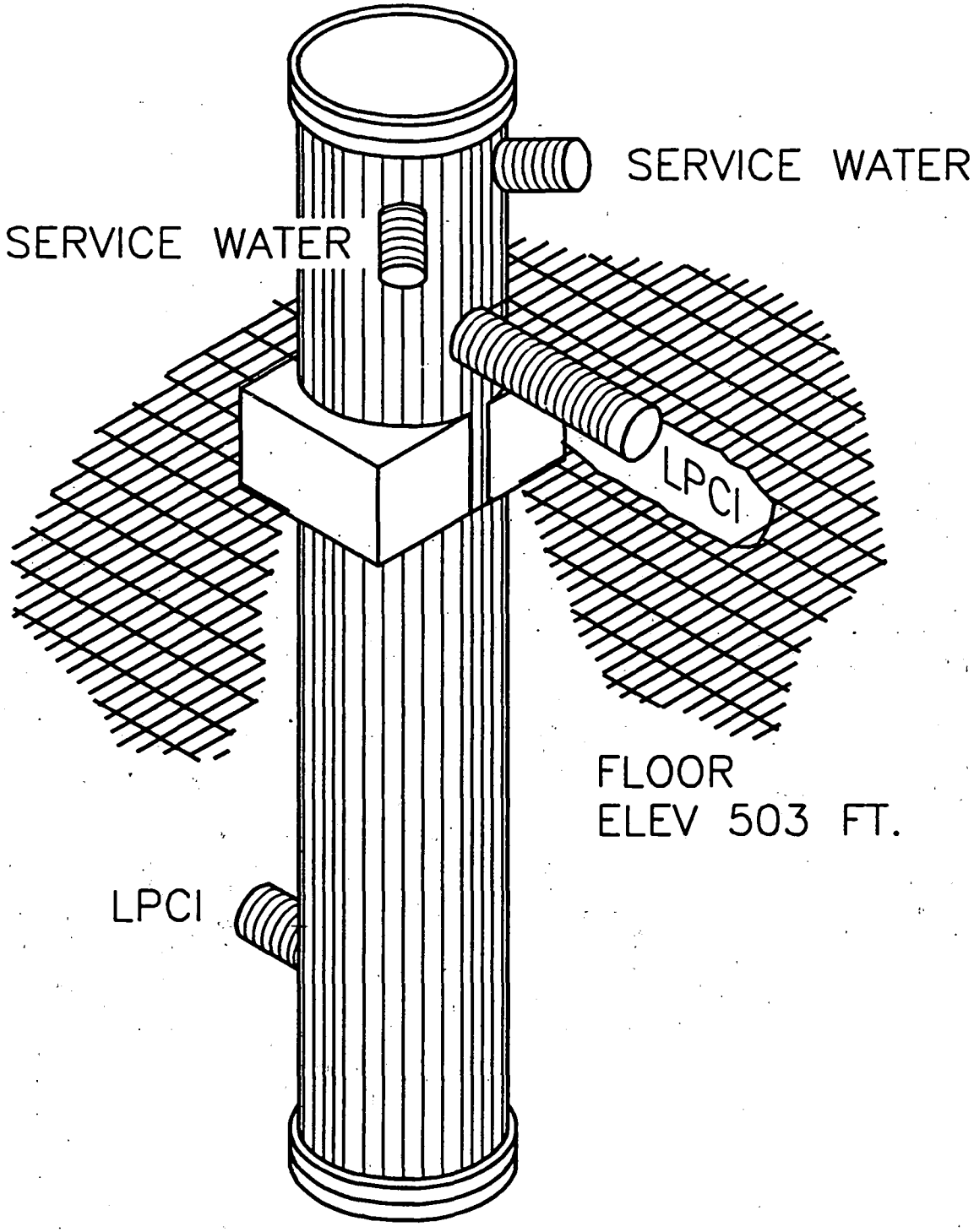
- **OBJECTIVES**
  - **To Define the Functional Design Bases**
  - **To Define the Structural Design Bases**
  - **To Demonstrate How Loads are Transmitted to the Structural Steel**

DESIGN BASES

- Functional Design Bases
  - Dresden LPCI H_x - Suppression Pool Cooling
  - Quad Cities LPCI/RHR H_x - Suppression Pool Cooling and Shutdown Cooling
- Structural Design Bases
  - Dead Load + Pipe Rupture + Operating Basis Earthquake (D+R+E) Using Normal Allowable AISC Code Stresses ("Elastic")
  - Dead Load +Pipe Rupture + Safe Shutdown Earthquake (D+R+E') Using AISC Code & "Plastic" Section Modulus



QUAD CITIES: RHR HEAT EXCHANGER & PIPING

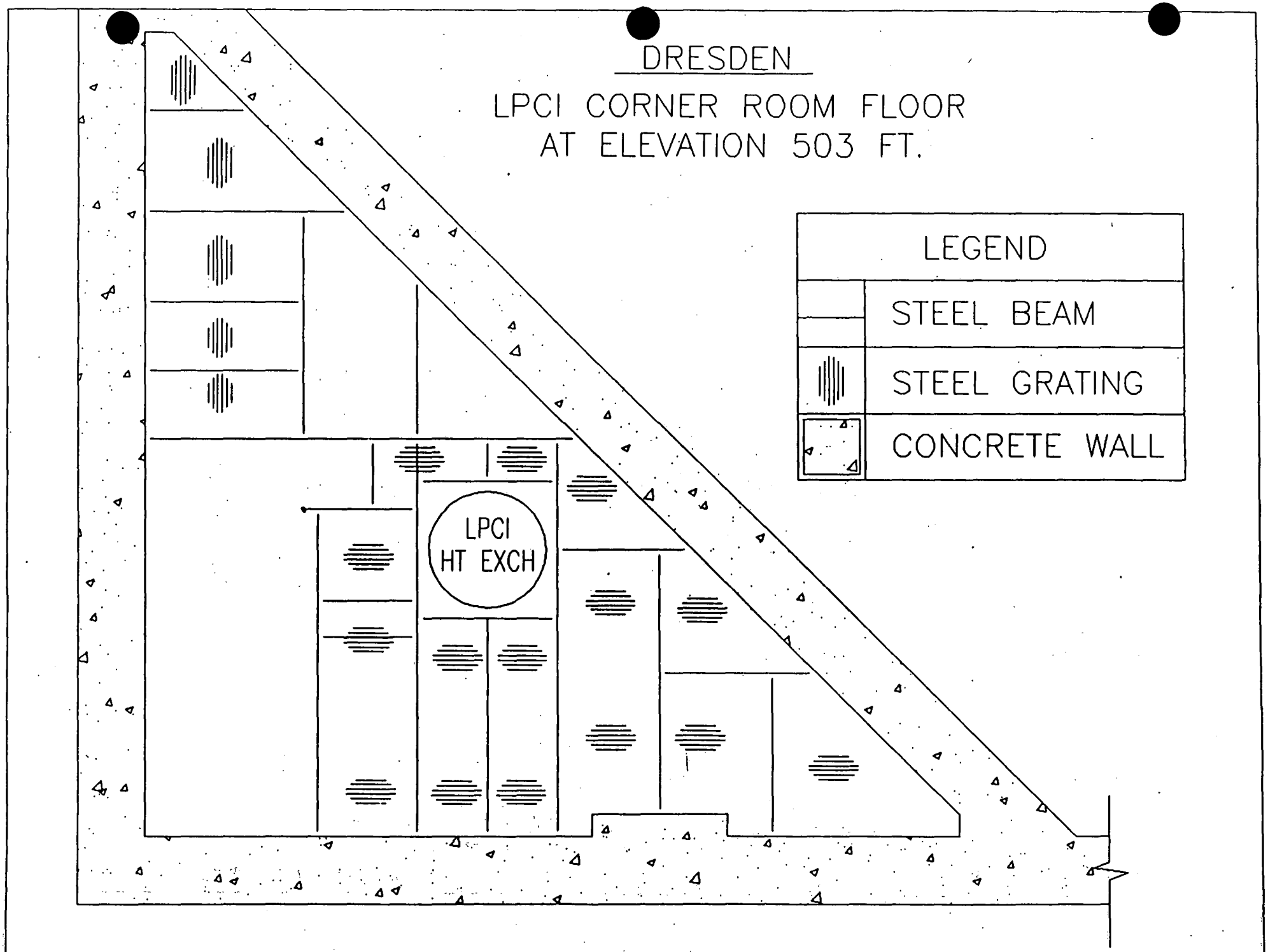


DRESDEN

LPCI HEAT EXCHANGER

DRESDEN

LPCI CORNER ROOM FLOOR AT ELEVATION 503 FT.



TECHNICAL ISSUE

- **Maintaining Structural Adequacy of the Steel Framing and Connections which Support the LPCI and LPCI/RHR Heat Exchangers**

CONTRACTOR INTERFACE

- From 1979-1991, ComEd Managed 79-14 and Mark I Loadings Programs to Closure (Impell, NuTech, and S&L)

DRESDEN - 1991

- **WHAT HAPPENED**
  - Spring Can Tolerances Added to Drawings to Support ISI Inspections. Routine Load Evaluation Interface Between A/E's Identified Unreported Loads on Steel
- **HOW WE RESPONDED**
  - A/E Performed Preliminary Analysis to Evaluate Loads. Identified Overstress in Some Beams. No Formal Analysis
  - No ComEd Response
- **DO WE BELIEVE THE RESPONSE WAS PROPER**
  - No. Personnel Performance Issue with Lack of Response
- **EXPECTED RESPONSE TODAY**
  - Walkdowns, PIF, Operability Evaluations, Action Plan to Restore Conformance

DRESDEN: 1993 - MAY 1994

- **WHAT HAPPENED**
  - Issue of Unresolved Report of Loads Raised by A/E (June 1993)

- **HOW WE RESPONDED**
  - Initiated Walkdowns to Identify all Pipe Support Attachments to the LPCI Corner Room Structural Steel (July-Dec 1993)
  - Performed a QE-40.1 Operability Determination Using a Qualitative Assessment Based on Input From Our A/E (Jan. 1994)
  - Developed an Action Plan to Pursue a Permanent Analytical Solution to the Issue to be Completed by 9/30/94
  - Initiated and Followed Action Plan to Demonstrate Steel in Conformance with UFSAR (February-May 1994)

DRESDEN: 1993 - MAY 1994 (Cont'd)

- **HOW WE RESPONDED (Cont'd)**
  - Met with NRC Region III to Discuss the Unresolved Loads and the Heat Exchanger Support Steel Issue (March 1994)
    - Reviewed the Action Plan
    - Discussed Methodology. As a Result of this Discussion, a Nozzle Load Issue was Identified
    - Nozzle Loads were Included in Action Plan
- **DO WE BELIEVE THE RESPONSE WAS PROPER**
  - No. the Analytical and As-Built Resolution was Pursued to be Completed by 9/30/94. Did Not Recognize Full Significance of Nozzle Loads
- **EXPECTED RESPONSE TODAY**
  - Understand the Safety Significance, Update the Operability Evaluation, Determine Action Plan and Inform the NRC

DRESDEN: JUNE - NOVEMBER 1994

- **WHAT HAPPENED**
  - Core Shroud Cracking and Other D3R13 Emergent Safety-Significant Issues were Identified
- **HOW WE RESPONDED**
  - Action Plan Put on Hold (June 1994) Extended NTS Items Tracking Issue
  - Concluded that a Modification was the Best Resolution (August 1994)
  - Initiated Modification Planning for 1995
  - Obtained Approval for a 1995 Modification Budget Line Item for Designing and Implementing Fixes for the Steel (September 1994)

DRESDEN: JUNE - NOVEMBER 1994 (Cont'd)

- **DO WE BELIEVE THE RESPONSE WAS PROPER**
  - **No. The Modification was to be Implemented in 1995 Should Have**
  - **Communicated with the NRC on the New Schedule**
- **EXPECTED RESPONSE TODAY**
  - **Restore the Steel Stresses to Within UFSAR Limits by Analysis or Modifications Before Start up from the Refuel Outage, or Gain Concurrence on Resolution Plan with NRC**

Dresden: Dec 1994 - May 1995

- **WHAT HAPPENED**
  - Dresden Stopped all New Modification Planning (December)
  - Analysis Action Plan Review Initiated (December)
  - Corporate Engineering Recommended Modifications (January 1995)
- **HOW WE RESPONDED**
  - Requested A/E Cost Estimates for Analysis
  - Requested Corporate Engineering to Support Analysis and Calculations
- **DO WE BELIEVE THE RESPONSE WAS PROPER**
  - No. Deferred the Opportunity for the 1995 Modification
  - Potential UFSAR Nonconformance was Not Made a Priority

DRESDEN: DECEMBER 1994 - MAY 1995 (Cont'd)

- **EXPECTED RESPONSE TODAY**
  - **Restore the Steel to Within UFSAR Limits by Analysis or Modifications Before Start up from the Next Refuel Outage, or Gain Concurrence on Resolution Plan with the NRC**

DRESDEN: JUNE 1995 - FEBRUARY 1996

- **WHAT HAPPENED**
  - Decision Made to Pursue Modification (June 1995)
- **HOW WE RESPONDED**
  - Initiated Modification Planning (June)
  - UFSAR Nonconformance Confirmed (July)
  - Obtained IRB/BRC Approval for 1997 and 1998 Installation (October)
  - Funding was Authorized for Design (November)
  - D3SW Corner Room Design Began (January 1996)
  - PORC Required Additional Justification for Startup (January 1996)
- **DO WE BELIEVE THE RESPONSE WAS PROPER**
  - No. Resolution was not Timely
    - Did Not Upgrade Operability Evaluation
    - Did Not Communicate the Status to the NRC

DRESDEN: JUNE 1995 - FEBRUARY 1996 (Cont'd)

- **EXPECTED RESPONSE TODAY**
  - **Restore the Steel Stresses to Within UFSAR Limits Before Start Up from the Next Refuel Outage or Gain Concurrence on the Resolution Plan with the NRC**

DRESDEN: FEB 1996 - MARCH 1996

- **WHAT HAPPENED**
  - NRC Raised Questions About Open Operability Assessment Prior to Unit 2 Start-Up
- **HOW WE RESPONDED**
  - Quantitative Assessment Performed to Demonstrate Operability to Support:
    - Continued Operation of Unit 3
    - Restart for Unit 2
  - Decision Made to Repair Steel Prior to Start-Up
    - Structural Steel Conformance Achieved for Unit 2 Prior to Start-Up including Nozzle Loads
    - Dresden Committed to Install Modifications to Restore Unit 3 to Full Compliance by the End of D3R14 (scheduled 9/96 - 11/96)

DRESDEN: FEBRUARY - MARCH 1996 (Cont'd)

- **DO WE BELIEVE THE RESPONSE WAS PROPER**
  - **No. Initial Decision was to Stick With the 1997/1998 Schedule. The Final Decision was to Restore the Steel Stresses to Within UFSAR Limits Prior to Starting up from D2R14 and D3R14**

- **EXPECTED RESPONSE TODAY**
  - **Restore the Steel Stresses to Within UFSAR Limits Before Start Up from the Next Refuel Outage**

CONCLUSIONS

- The Structural Steel was Always Operable Dresden was Always Safe
- We were Untimely in Resolving the Undocumented Piping Loads
- Until February 1996, We were not Sufficiently Sensitive to UFSAR Conformance
- We will Restore Both Units to UFSAR Conformance Prior to Their Return To Service from their Refueling Outages

QUAD CITIES: 1991

- **WHAT HAPPENED**
  - During Walkdowns for Rigging Assessments Quad Cities Identified (March)
  - Pipe Support Loads Not Included in Analysis of Record
  - Original Construction Beam Copes in Unit 2 'A' Room

- **HOW WE RESPONDED**
  - Analysis Indicated Overstresses in Unit 2 as a Result of Beam Copes and Rigging Loads

Quad Cities: 1991 (Cont'd)

- HOW WE RESPONDED (Cont'd)
  - ECNs Issued and Installed to Correct Identified Condition
    - Work Completed In 1992
  - Calcs, Transmittals And Approval Letter Indicated Steel Within Design Allowables as Result of Fixes
- DO WE BELIEVE THE RESPONSE WAS PROPER
  - No, Personal Performance Issue, Other Additional Loads Not Pursued
- EXPECTED RESPONSE TODAY
  - Would Initiate a PIF Perform Operability Determination and Restore to FSAR Conformance

QUAD CITIES: 1992 - 1994

- **WHAT HAPPENED**
  - The Individual Planned to Reconcile Pipe Support Loads by Using Load Monitoring System (LMS)
- **HOW DID WE RESPOND**
  - Resolution was Not Tracked
- **DO WE BELIEVE THE RESPONSE WAS PROPER**
  - No, there was Reliance on One Individual to Keep Resolution on Track
- **EXPECTED RESPONSE TODAY**
  - Write a PIF and Follow to Resolution

QUAD CITIES: MARCH 1994

- **WHAT HAPPENED**
  - March 1994, Notification of Need to Include Heat Exchanger Nozzle Loads
- **HOW WE RESPONDED**
  - Reconciliation of USI A-46 to Occur Through the Use Of SQUG Criteria and Continuation of the LMS Task
- **DO WE BELIEVE THE RESPONSE WAS PROPER**
  - No, SQUG Program was in Progress with Hx Included on Draft List, But no Positive Controls were in Place to Ensure Closure
- **EXPECTED RESPONSE TODAY**
  - Positive Tracking Mechanism Such as NTS would Track Item to Ensure Resolution

QUAD CITIES: NOVEMBER 1994

- **WHAT HAPPENED**
  - November 1994, a Corporate Question to Site Engineering on Existence of Problem at Quad Cities

- **HOW WE RESPONDED**
  - Because of 1992 Fixes, Quad Cities Site Engineering Concluded that Non-Conforming Conditions did not Exist

QUAD CITIES: NOVEMBER 1994 (Cont'd)

- **DO WE BELIEVE THE RESPONSE WAS PROPER**
  - **No, Communications were Informal Between Personnel with no Detailed Historical Knowledge of the Issue**

- **EXPECTED RESPONSE TODAY**
  - **Formal Communications Between Stations and with Corporate Engineering**

QUAD CITIES - 1995

- **WHAT HAPPENED**
  - In August 1995, Further Questions by Corporate and Site Engineering Determined Problem Existed at Quad Cities
- **HOW WE RESPONDED**
  - PIF Written, Performed Operability Assessment
  - Initial Qualitative Operability Determination Not Approved By PORC
  - Commenced Immediate Compensatory Action of Jacking Up Heat Exchanger in Conjunction with Quantitative Operability Assessment
  - Analysis and Design Work Initiated to Bring Into Conformance

QUAD CITIES: 1995 (Cont'd)

- **DO WE BELIEVE THE RESPONSE WAS PROPER**
  - **Yes**

- **EXPECTED RESPONSE TODAY**
  - **Same**

QUAD CITIES: OCTOBER 1995

- **WHAT HAPPENED**
  - Resolution Plan Presented To PORC (Oct)
- **HOW WE RESPONDED**
  - Plan Showed Design For Unit 1 to be Issued By December 1995 with Installation for Q1R14
  - Plan was Approved, Question was Asked About Possibly Installing On-Line
  - Design Work Initiated

QUAD CITIES: OCTOBER 1995 (Cont'd)

- **DO WE BELIEVE THE RESPONSE WAS PROPER**
  - **Yes, Plan Indicated Completion Prior to End of Next Refuel Outage**
- **EXPECTED RESPONSE TODAY**
  - **Same, However Would Emphasize Specific Time Interval for Placing Component Back in Conformance**

QUAD CITIES: NOV - DEC 1995

- **WHAT HAPPENED**
  - Preliminary Design Work Demonstrated that Extensive Reinforcements Would Be Required
- **HOW DID WE RESPOND**
  - Engineers Involved Determined that More Time Would be Required to Complete Design Work
  - Schedule was Moved to Allow Possible On Line Installation Immediately Following Q1R14

QUAD CITIES: NOV - DEC 1995 (Cont'd)

- **DO WE BELIEVE THE RESPONSE WAS PROPER**
  - **No, Potential Delay Beyond Start-Up Should Have Been Brought to Upper Management for Decision**

- **EXPECTED RESPONSE TODAY**
  - **Clear Expectations would Be in Place for when conformance with the UFSAR is to be restored**

QUAD CITIES: FEBRUARY 1996

- **WHAT HAPPENED**
  - February 1996, Discussion Between Design Supervisor and Site Engineering Manager
- **HOW WE RESPONDED**
  - Contrary To SEMs Belief - Work Scope was Not in Current Outage
  - Decision Made by SEM and Station Manager to Perform Repairs During Q1R14
  - Structural Steel Conformance Will be Achieved for Unit 1 Prior to Start-up

QUAD CITIES: FEBRUARY 1996 (cont'd)

- DO WE BELIEVE THE REPONSE WAS PROPER
  - Yes
- EXPECTED RESPONSE TODAY
  - Same

QUAD CITIES CONCLUSIONS

- The Structural Steel was Always Operable and Quad Cities was Always Safe
- We were Untimely in Reconciling the Undocumented Piping Loads
- We will Restore Both Units to UFSAR Conformance Prior to their Return to Service from their Refueling Outages

CORNER ROOM STEEL REPORTABILITY

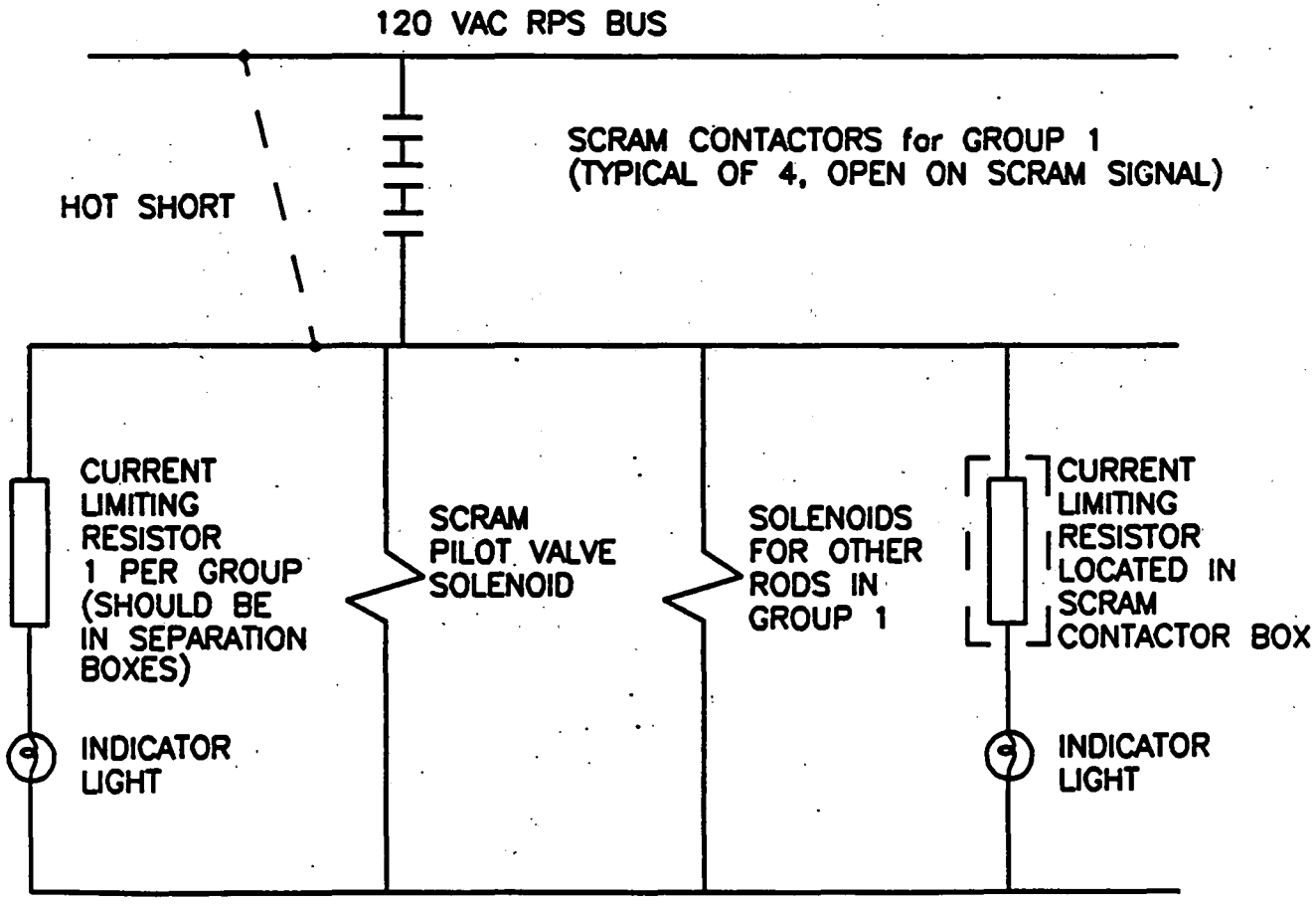
DRESDEN RPS DESIGN BASIS

- **UFSAR Section 7.2.1 Definition**
  - **Prevent the Release of Radioactive Materials in Excess of CFR100 Limits as a Consequence of Any DBA**
  - **Prevent Fuel Damage Following Any Single Equipment Malfunction or Operator Error**
  - **Function Independently of Other Plant Controls and Instrumentation**
  - **Function Safely Following Any Single Component Malfunction**

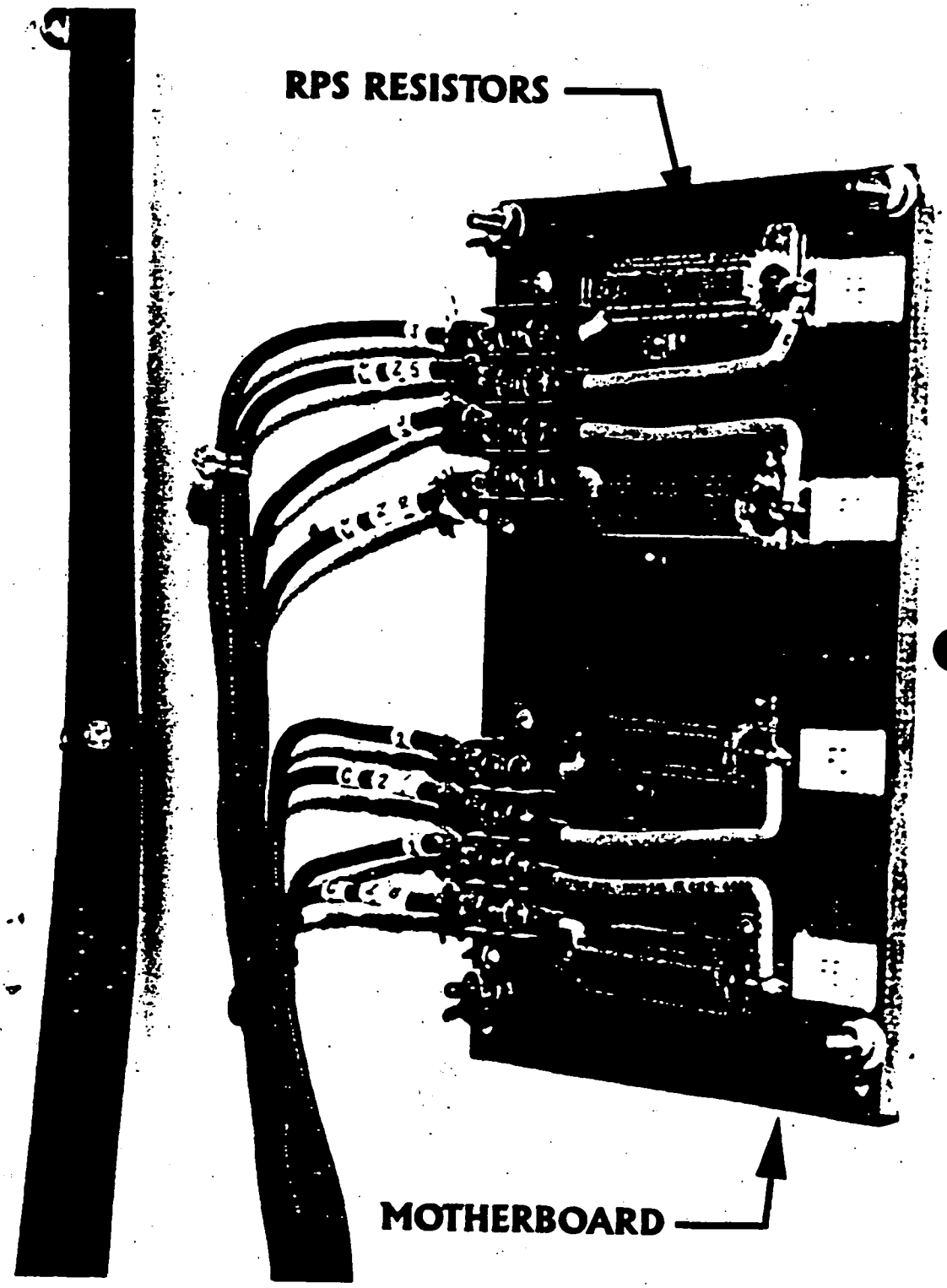
DRESDEN RPS: 1971-1977

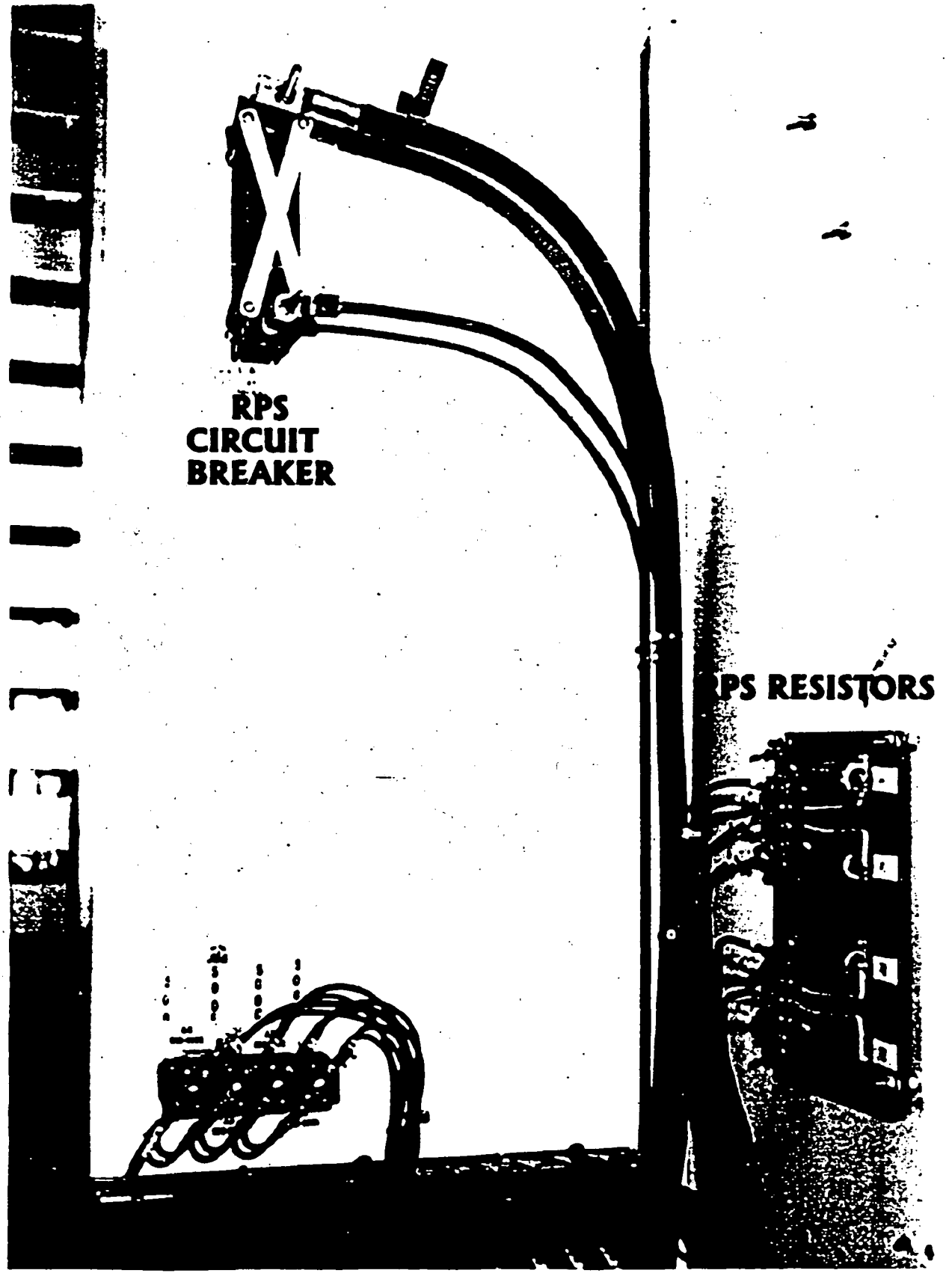
- 1971 Original Design
  - Featured Scram Pilot Solenoid Indicating Lights on Control Room Front Panels
  - Indicating Light Isolation Resistors Enclosed in Metallic Scram Contactor Boxes
- 1977 Modified Design
  - Added New Solenoid Indicating Lights on Control Room Back Panels
  - Indicating Light Isolation Resistors Installed on Motherboards in Control Panels

Dresdens R.P.S.



SCRAM PILOT VALVE SOLENOID CIRCUIT
(TYPICAL OF "A" AND "B")


RPS RESISTORS
MOTHERBOARD


RPS
CIRCUIT
BREAKER
PS RESISTORS

DRESDEN RPS: DECEMBER 1993

- **WHAT HAPPENED**
  - GE Notifies Dresden of Potential Inadequate Separation in RPS

- **HOW WE RESPONDED**
  - Dresden Issued Operability Assessment
  - No Deviation from UFSAR Section on RPS
  - Develop Action Plan with Intent to Modify the Resistors
  - QC Found this Issue Not Applicable

DRESDEN RPS: DECEMBER 1993

- **DO WE BELIEVE THE RESPONSE WAS PROPER**
  - **Yes. Not a UFSAR Deviation. Action Plan Addressed Modification Planning and IRB review by February 1994 and was Tracked by NTS**

- **EXPECTED RESPONSE TODAY**
  - **Same**

DRESDEN RPS: 1994

- **WHAT HAPPENED**
  - Rebaselined UFSAR Issued in January 1994
  - Rebaselined UFSAR Describes Detailed Segregation Requirements as Defined in GE Design Specification
- **HOW WE RESPONDED**
  - No Review of Open Operability Evaluations to the New UFSAR was Performed
- **DO WE BELIEVE THE RESPONSE WAS PROPER**
  - No. We Should have Reviewed the Open Operability Evaluations
- **EXPECTED RESPONSE TODAY**
  - Open Operability Evaluations Should be Reviewed

DRESDEN RPS: FEB 1994 - MAY 1995

- **WHAT HAPPENED**
  - Emerging Issues and Outage Extensions

- **HOW WE RESPONDED**
  - No Significant Progress on Modification Planning was Made and NTS Items Extended Without Senior Management Approval

DRESDEN RPS: FEB 1994 - MAY 1995 (Cont'd)

- **DO WE BELIEVE THE RESPONSE WAS PROPER**
  - No. Operability Evaluation Action Plan was Never Revised
  - Management Process to Review NTS Extensions did not Exist
- **EXPECTED RESPONSE TODAY**
  - Review Open Operability Evaluations Against UFSAR
  - Change UFSAR or Implement Modification Prior to Startup from Current Refueling Outage
  - Since late 1995, Policy Requires NTS Item Extension Approval by Senior Management (SVP or Station Manager)

DRESDEN RPS: JUNE 1995 - JAN 1996

- **WHAT HAPPENED**
  - Scram Contactor Boxes Inspections and Modification Planning Completed (July)
- **HOW WE RESPONDED**
  - Modification Approved by Dresden Management (August)
  - Installation Approved for the Next Two Refueling Outages (1996 and 1997)
  - Lead Unit 3 Design Completed (October)
- **DO WE BELIEVE THE RESPONSE WAS PROPER**
  - No. UFSAR Deviation was Not Recognized

DRESDEN RPS: JUNE 1995 - JAN 1996 (Cont'd)

- **EXPECTED RESPONSE TODAY**
  - Perform a UFSAR Change or Modification Prior to Startup from the Current Refueling Outage
  - Review and Resolve Open Operability Evaluations Against the UFSAR

DRESDEN RPS: FEB - MARCH 1996

- **WHAT HAPPENED**
  - NRC Region III Raised Issue of Open Operability Evaluation
- **HOW WE RESPONDED**
  - Reviewed the Operability Evaluation to Rebaselined UFSAR
  - Identified Deviation from GE Design Specification Referenced in Rebaselined UFSAR
  - Initiated Analysis which Demonstrated Capability to Resolve Deviation by 50.59. Installed Configuration was in Accordance with RPS Design Basis
  - Decided to Implement Unit 2 Modification In D2R14 to Add Margin Instead of Doing a UFSAR Change
  - Updated Operability Evaluation for Unit 3

DRESDEN RPS: FEB - MARCH 1996 (Cont'd)

- –Reviewed all Other Open Operability Evaluations
- –Verified Full Qualification for Unit 2 Operability Evaluations or Reviewed Resolution Plans with NRC Region III
- –Scrubbed Key Backlogs for Other Actual or Potential UFSAR Discrepancies
- –Resolved Findings from Backlog Reviews
- –Revised IRB/BRC Policy to Identify Corrective Action Window for Operability Evaluations to be Until the Next Refueling Outage

DRESDEN RPS: 1996

- **DO WE BELIEVE THE RESPONSE WAS PROPER**
  - **Yes**

- **EXPECTED RESPONSE TODAY**
  - **Same Resolve Issue by UFSAR Change or Modification During Current Refueling Outage**
  - **Review and Resolve Engineering Work Against UFSAR**

DRESDEN RPS REPORTABILITY

- **Basis For Decision**
  - **50.73 (a) (2) (ii) Requires Reporting if the Event or Condition Resulted in the Plant Being Seriously Degraded, or in a Condition Outside the Design Basis of the Plant, as Described in the Rule**
  - **Design Basis as Defined in 10CFR50.2**
  - **NUREG 1022 Draft 2 Guidance**

DRESDEN RPS REPORTABILITY CONCLUSIONS

- RPS was Not seriously Degraded Since no Credible Hot Short Condition Could Occur which Would Result in Failure of RPS.
- With any Single Component Failure, RPS Would Have Functioned Therefore it Continuously Met the System Functional Goals.
- It Continuously Met the Design Basis of the Plant
- Condition was Not Reportable

DRESDEN RPS CONCLUSIONS

- RPS was Always Operable and Therefore the Plant was Safe
- Met the Design Basis but Not the Licensing Basis
- We were Untimely in Resolving the UFSAR Nonconformance
- We will Restore Both Units to UFSAR Conformance Prior to Their Return To Service from Their Refueling Outages

ROOT CAUSE & CORRECTIVE ACTION ANALYSIS

- **Process**

  - **Analyzed Time Line to Define Causal Factors**

  - **Focused on 2 Periods**
    - 1/91-1/94 (ComEd Decentralization)
    - 1/94-(Current Engineering Model)

  - **Categorized Causal Factors Into 4 Primary Causes**

  - **Defined Short Term and Long Term Corrective Actions**

PRIMARY CAUSES

1991-1994

- **Ineffective ComEd Processes to Deal with Transition to a Decentralized Model**
  - Multiple Turnovers of Cognizant Engineers & Plant Leaders
  - Evolving Processes for Approving Work
  - Programs Shutdown with Open Issues and No one Accountable to Close or Trend
  - Multiple AE Interfaces
  - **Ineffective Focus on Technical Issues**
  - Input from Contractors Not Evaluated or Challenged
  - Lack of Technical Knowledge to Challenge Contractor
  - Technical Experience On Site Not Sufficient to Walkdown and Recognize Complex Problems

PRIMARY CAUSES

1991 - 1994 (Cont'd)

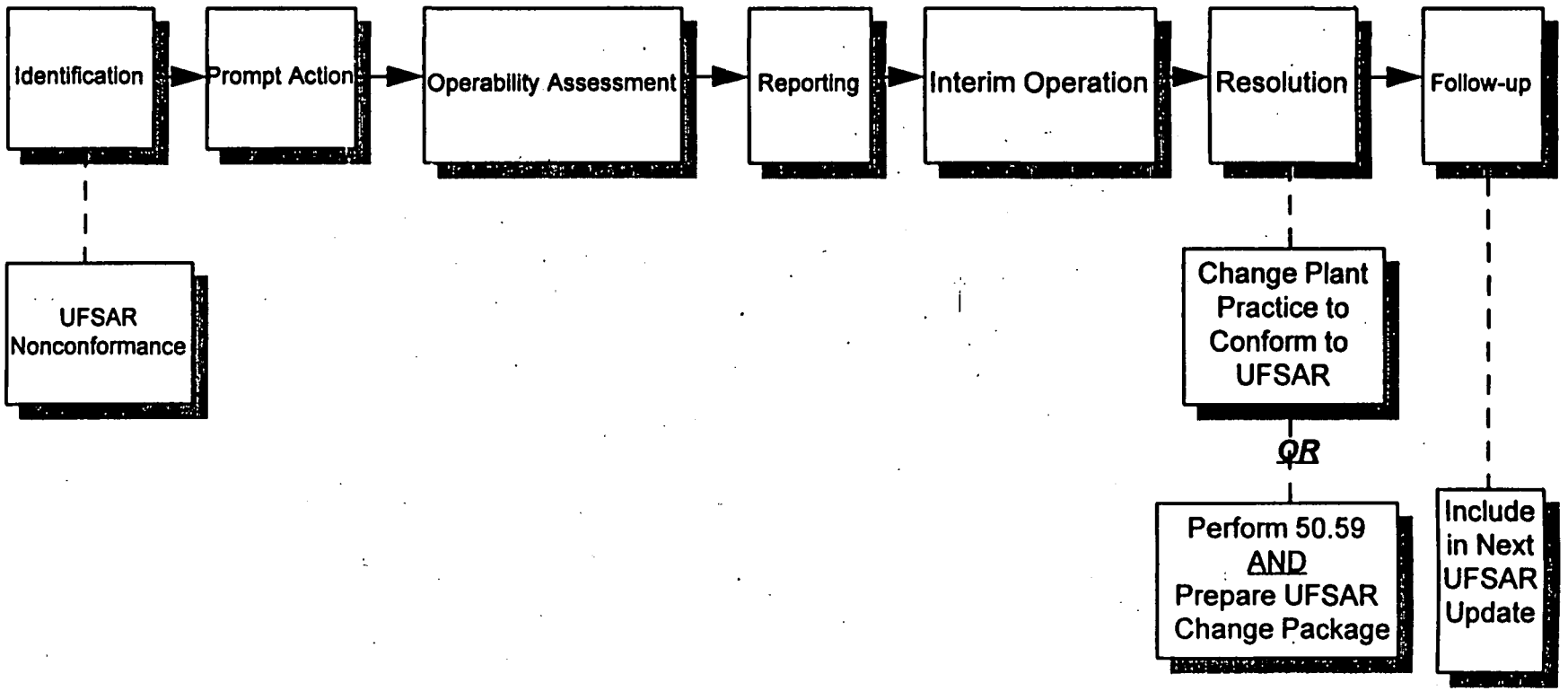
- **Ineffective Engineering Management Processes**
  - No Process to Manload Scope and Manage Work
  - Backlogs Not Routinely Evaluated for Significance
  - No Engineering Business Plan Aligned to Site Goals

PRIMARY CAUSES

1994 - 1996

- **Ineffective Focus on Technical Issues While In Transition to In House Engineering Model**
  - With Multiple Attempts, Unable to Close Problem in Timely Manner
  - Allowed a Change in Design Model Without Recognition of Implications (Inclusion of Nozzle Loads)
- **Ineffective Engineering Management Processes**
  - Same as '91-'94
- **Ineffective Understanding of the ComEd Process for Resolution of Nonconforming Conditions**
  - Need for Timely Resolution of UFSAR Nonconformance Not Well Understood

Process for Resolving Degraded and NonConforming Conditions

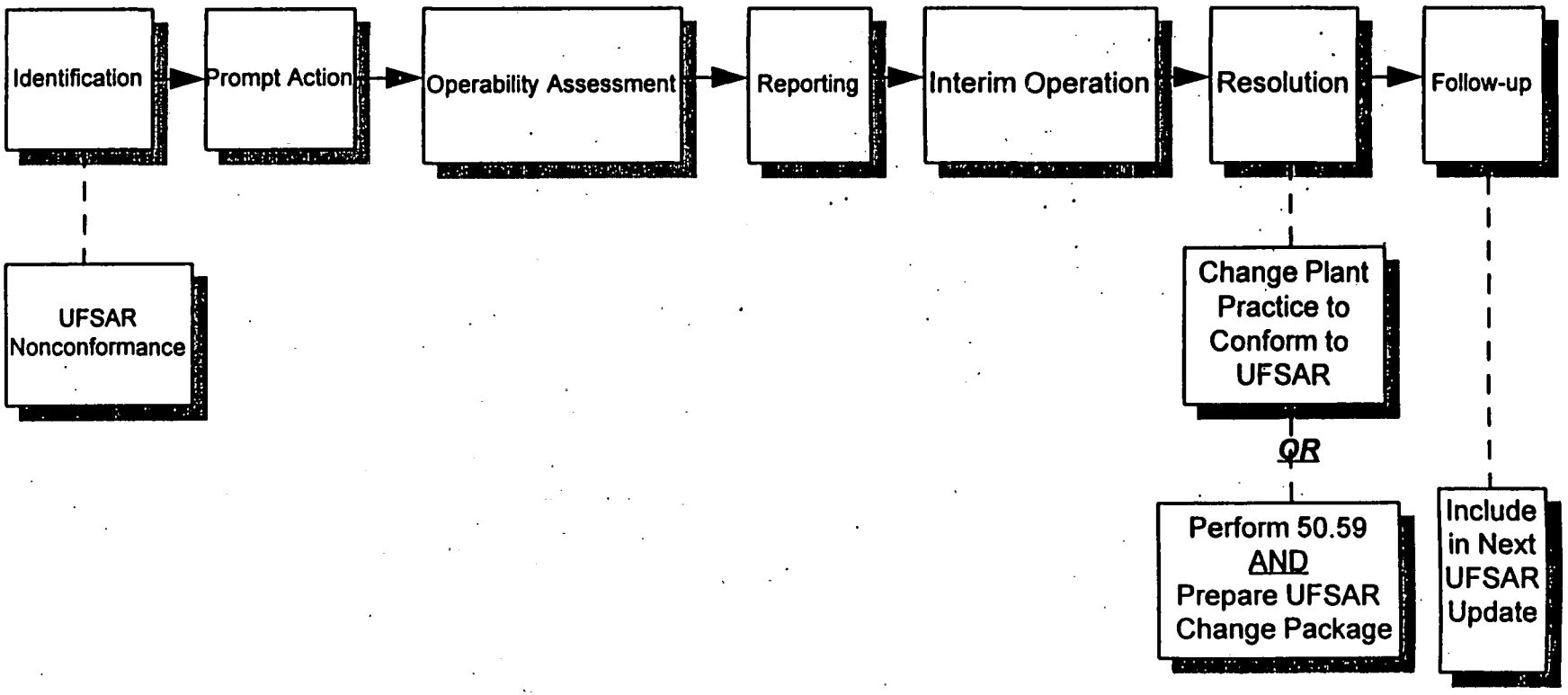


Primary Causes '91-'94	Short Term Actions (Complete)	Long Term Actions (9/96)	Responsibility
- Ineffective Process for Transition to Decentralization (Issue: Corrective Action Timeliness)	- Chiefs/SEMs Developed List of Potentially Significant Issues (1995 - Complete)	- (None-Decentralization Complete)	

Primary Causes '91-'94 and '94-'96	Short Term Actions (Complete)	Long Term Actions (9/96)	Responsibility
- Ineffective Focus on Technical Issues (Issue: Design Control)		- D/Q Perform Mod Design Control Assessments (9/30/96)	Kundalkar Hutchinson
- Ineffective Engineering Management Process (Issue: Corrective Action Timeliness)	- Review D/Q backlogs for Other UFSAR Nonconformances and Resolve Before Startup - For Other Operating Units, Review Operability and UFSAR Rebaseline Backlogs and Resolve by Significance - Define an Engineering Management Process and Self-Assess	- All Sites Implement Performance Meetings (6/30/96)	Hosmer

Primary Causes '94-'96	Short Term Actions (Complete)	Long Term Actions (9/96)	Responsibility
- Lack of Understanding of Nonconforming Condition Process (Issue: Corrective Action Timeliness)	- Conduct Awareness Training for Eng Managers Team	- Conduct Awareness Training for Sites	Site VPs
		- Develop Continuing Training Module (9/30/96)	Lentine

Process for Resolving Degraded and NonConforming Conditions



SELF ASSESSMENT RESULTS OF ENGINEERING'S MANAGEMENT PROCESS

- **Weakness in Three Areas:**
  - Periodic Evaluation of Backlogs, Especially Open Operability Evaluations, Against Significance Measure (Significance Measure to Include FSAR Conformance)
  - Use of Cost/Schedule Tools by all Engineering Functions (Currently Used in Mod Group)
  - Common Performance Indicators and Performance Meetings

CONCLUSIONS

- At No Time were these Events Safety Significant
- Current Organization had and has Technical Skills to Define the Nonconformance and Restore Margin to the FSAR Criteria
- ComEd did not Meet Expectations for Communication with NRC Regarding Resolution Plans
- Weaknesses Exist in Engineering Management Process and the Process for Resolving Nonconforming Conditions that Require Long Term Actions
- Appropriate Causal Factors and Corrective Actions have been Identified and Will Be Closed
- Corrective Action Plan will be Completed by September 30, 1996

CONCLUSIONS (Cont'd)

- With Respect to ComEd's USFAR Conformance Review:
  - ComEd Culture Places Appropriate Importance on an Accurate UFSAR (Rebaseline Programs Have Raised Expectations); but we Have Not Been Timely in Resolving Identified Nonconformances
  - Reviews at All Six Sites Finding Some Unresolved Nonconformances; but they Have Been Able to be Resolved by Established, Routine Change Processes (50.59s, UFSAR Changes)
  - Additional UFSAR Reviews Initiated as a Result of ComEd's Self-Assessment will be Completed by 9/30/96
  - Training in Progress to Improve Awareness of UFSAR Conformance Issues.