

*Catawba Nuclear Station
Engineering Performance
February 16, 2000*



Engineering - NRC Issues

- ✦ *3/25/1999 PPR Discussing Engineering Performance*
- ✦ *6/18/1999 PPR Meeting Concerns*
- ✦ *9/9/1999 Update meeting in Atlanta*

NRC - PPR Results from March 25, 1999

"Engineering performance has declined since the last assessment. The Engineering performance decline was the result of deficiencies in auxiliary building ventilation system testing, an overheating event in the upper surge tank, and degraded conditions in the Unit 1 Ice condenser. While the issues were ultimately resolved properly, each had roots in poor engineering performance. Nevertheless, engineering programs and processes were considered sound. Likewise, the analysis and resolution of emergent issues were good. Core inspection will focus on Engineering's understanding of plant design and engineering support. A regional initiative inspection to follow up on open items will be performed."

Pete Herran comments on Engineering performance in June 18, 1999 meeting with NRC

First, we agree our performance needs to improve. The key to that improvement will be actions that we take to **prevent** future site events similar to those described in the PPR.

The Engineering leadership team believes that the foundation for these **prevention improvements** are in our accountability system (back to the basics). Accountability starts with **clear expectations**. Therefore we are focusing on expectation in **five key areas**. The **first two** are embedded in our mission statement, which we implemented in 1/99.

"To provide optimized engineering solutions for 1) **Systems, Structures and Component Reliability** and 2) **Design Basis Protection**."

Engineering is the site conscience in both of these areas and must provide site leadership to **prevent events**.

These first two expectation focus areas are supported **by three additional focus areas**:

- 3) **Training our staff**
- 4) **Self Improvement/ Human Performance**
 - Find our areas for improvement
 - Six Tools
- 5) **Structured Engineering Work Management System**
 - Balance short and long term activities
 - Results in proactive vs. reactive culture

Again, the Engineering leadership team believes these activities are key areas to our future performance and we are totally committed to them.

Site Focus Initiatives

- ◆ *Corrective Action Program*
- ◆ *Human Performance*
- ◆ ***Configuration Management***
- ◆ *Procedures*
- ◆ ***Equipment Performance***

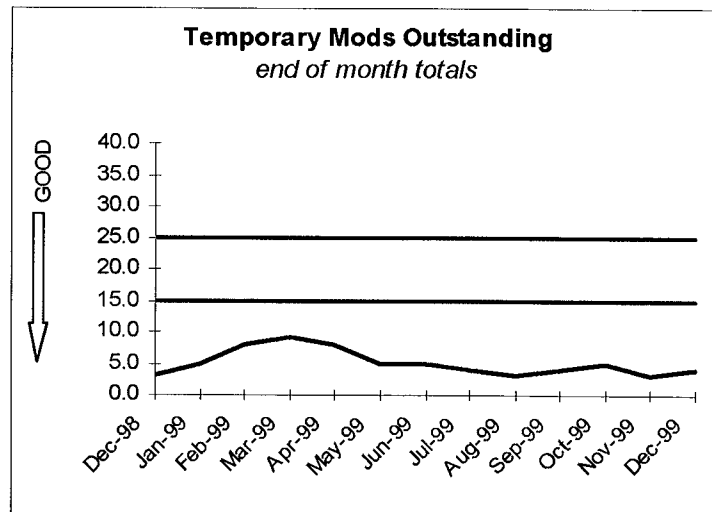
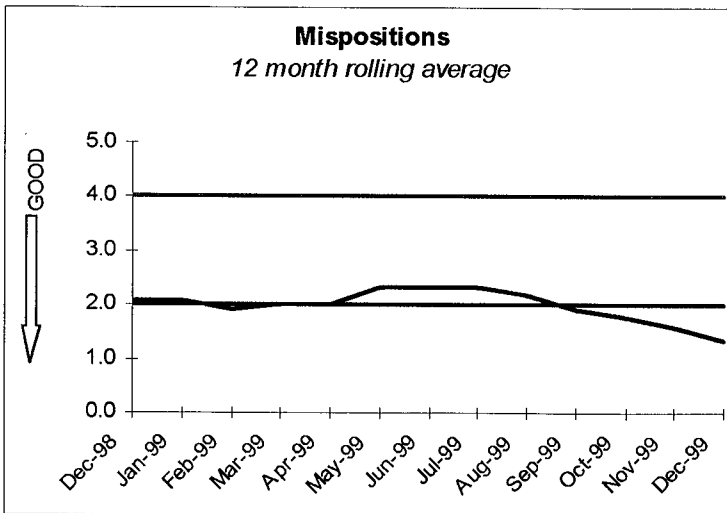
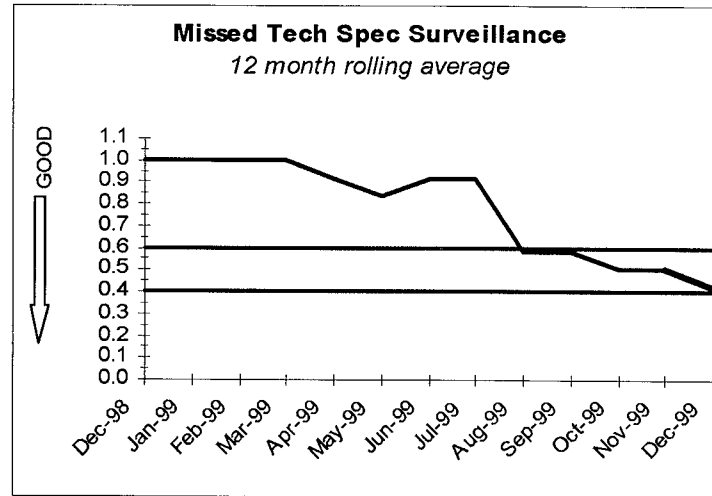
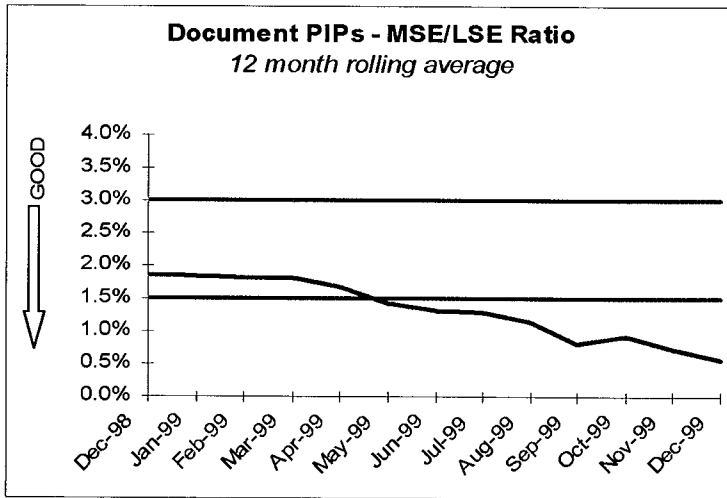
Engineering - Configuration Management/Protect the Design Basis

◆ *Site Measures*

★ Consistent 3 Site Configuration Management Measures

- ◆ Document PIP's - MSE/LSE Ratio
- ◆ Missed Tech Spec Surveillances
- ◆ Mispositionings
- ◆ Temporary Mods Outstanding

Engineering - Configuration Management/Protect the Design Basis



Engineering - Configuration Management/Protect the Design Basis

◆ *Engineering Measures*

★ Operable But Degraded (OBD's) - Trending Down

- ◆ HVAC - 3 OBD's (TS Changes in 2000 and Mod in 2001)
- ◆ CA System - 2 OBD's (4/00)
- ◆ ND/NS Sump Pumps and SSPS - 1 OBD (Mods in 2000)
- ◆ Steam Generator Tube Rupture - 1 OBD (TS change in 2000)

Engineering - Configuration Management/Protect the Design Basis

◆ *Site Initiatives - Configuration Management*

★ Invest in Long Range Configuration Improvements

- ◆ Implement Configuration Management Project Activation Process
- ◆ Labeling Project
- ◆ As-Built Drawing Update (Complete)
- ◆ HVAC Drawing Update (Complete)
- ◆ Fire Seal Penetration Configuration Upgrade
- ◆ Charging Pump Backup Cooling Mod (U1 complete, U2 4/00)
- ◆ Steam Generator Overfill Mod (U1 complete, U2 4/00)
- ◆ UFSAR Reverification
- ◆ Safety Analysis Input Manual (SAIM Review)

Engineering - Configuration Management/Protect the Design Basis

◆ *Engineering Initiatives*

- ★ Third Trimester Continuing Training in 1999
 - ◆ LERs - Current vs. Historical
 - ◆ Operability "Triangle"
 - ◆ Configuration Management "Triangle"
- ★ Advanced Engineering Training
- ★ Recruit SROs
- ★ Leadership Sessions
 - ◆ Strengthen accountability
 - ◆ Use of event-free human performance tools
 - ◆ Conducted 3/99, 11/99, and Planned 2/00

Engineering - Configuration Management/Protect the Design Basis

- ◆ *Engineering Initiatives (continued)*

- ★ HVAC Team - Recovery Plan

- ◆ Procedure Review Initiatives
- ◆ Operable But Degraded Issues
- ◆ Maintenance Rule Systems/ Components
- ◆ Major Equipment Program Review / Top Equipment Program Review

Engineering - System Equipment Reliability

◆ **Site Measures**

★ *overall measure - does not meet*

Measures	Exceeds	Target	Does not Meet
Lost Generation Days Due to Equipment Failure		<24.2 days	
%Maintenance Rule A1 Action Plans Met		>75%	
%Maintenance Rule Functional Failures Due to Equipment Problems		<15%	
System Health Report Card		>70%	
Component Health Report Card		>70%	

Engineering - System Equipment Reliability

◆ *Site Initiative Equipment Performance*

★ Description: Significantly improve equipment/system reliability

★ Sub Initiatives

◆ Restructured Top Equipment Problem (TEPR) inputs

* Health Reports

* Maintenance Rule A1 List

* OBDs/ NCIs

* Resolved 8 Major Equipment Problems and 22 Work Arounds

◆ HVAC Problems

◆ Created focused Engineering team with supervisor

◆ Creating and implementing individual system action plans

◆ Status - ongoing

Engineering - System Equipment Reliability

- ◆ CA System
 - ◆ Numerous Mods to be Implemented through 1EOC12 & 2EOC11
 - ◆ Clear ODBs associated with CA
 - ◆ Status - ongoing

- ◆ Maintenance Engineering Interface
 - ◆ Strengthening MNT/ENG interface and establishing clear roles and responsibilities
 - ◆ Status - ongoing

- ◆ PM/PT Program Effectiveness
 - ◆ Evaluating preventive maintenance vs. corrective maintenance on individual component
 - ◆ Status - ongoing

- ◆ Ice Condenser Issue is closed per NRC letter dated January 28, 2000

Engineering - Engineering Work Management

◆ *Engineering Measures*

★ Consistent 3 Site Measures

- ◆ PIP
- ◆ Modifications
- ◆ Engineering Support Plan (ESP)
- ◆ Support of Work Control Process
- ◆ Unplanned Support

★ Improvement Needed

- ◆ PIP Corrective Actions >6 Months
- ◆ Root Cause Cycle Time
- ◆ Modification Package Schedule Effectiveness
- ◆ Work Orders on HOLDENGR/HOLDMOD>30 Days

◆ *Engineering Initiatives*

- ★ EWM Process and Tools
- ★ Resource Alignment

Engineering - Assessments

◆ *Major Assessments in 1999*

- ★ Operability (Engineering)
- ★ Functional (NAID)

◆ *Major Assessments in 2000*

- ★ INPO Assist Visit (2/00) Engineering Work Mgmt and HVAC
- ★ Functional (NAID)
- ★ 10CFR 50.59 Assessment
- ★ Battery Assessment

Engineering - Concerns

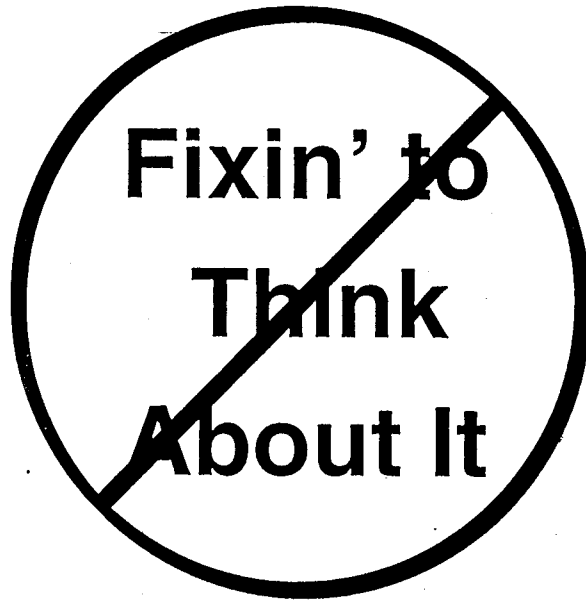
- ◆ *Recent NRC Inspections*
 - ★ Engineering Core
 - ★ GL 96-01
 - ★ RHR Evaluation
 - ★ Tech Spec Surveillances

- ◆ *White NRC Indicator for Residual Heat Removal System*
 - ★ 1997 Heat Exchanger Bypass Valve Failure -
Fault Exposure Hours

Summary

- ◆ *Focus on accountability/ expectations*
 - ★ Design Basis Protection
 - ★ System/ Equipment Reliability
 - ★ Engineering Work Management

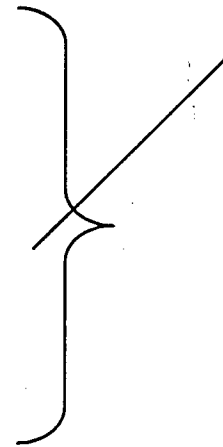
- ◆ *We will continue to be self-critical*



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**Design Basis
Protection**



- **Human Performance**
- **Configuration Management**
- **Procedures**
- **Equipment Performance**
- **Corrective Action Program**

Design Basis Protection / Configuration Management Triangle

