U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report No:	50-397/91-48
Docket No:	50-397 EA 91-183
Licensee:	Washington Public Power Supply System P. O. Box 968 Richland, WA 99352
Facility Name:	Washington Nuclear Project No. 2 (WNP-2)
Meeting at:	Region V Office, Walnut Creek, California
Date of Meeting:	December 20, 1991
Prepared by:	D. L. Proulx, Resident Inspector, WNP-2

Approved by: P. H. Johnson, Chief — 1/22/92 Date Signed
Reactor Projects Section 3

Meeting Summary:

Enforcement Conference and Management Meeting on December 20, 1991 (Report No. 50-397/91-48)

Enforcement Conference and Management Meeting to discuss issues related to the Containment Atmospheric Control (CAC) system and other management topics. A copy of certain information provided by the licensee at the conference is included as Enclosure 1.

DETAILS

1. Meeting Participants

Nuclear Regulatory Commission

J. B. Martin, Regional Administrator
R. P. Zimmerman, Director, Division of Reactor Safety and Projects
K. E. Perkins, Deputy Director, Division of Reactor Safety and Projects
F. A. Wenslawski, Deputy Director, Division of Radiation Safety and Safeguards
M. D. Blume, Regional Attorney
F. R. Huey, Enforcement Officer
A. D. Johnson, Enforcement Officer
S. A. Richards, Chief, Reactor Projects Branch
D. F. Kirsch, Chief, Reactor Safety Branch
P. H. Johnson, Chief, Reactor Projects Section 3
G. P. Yuhas, Chief, Reactor Radiological Protection Branch
J. H. Reese, Chief, Safeguards, Emergency Preparedness, and Non-power Reactors Branch
R. C. Sorensen, Senior Resident Inspector, WNP-2
P. L. Eng, Project Manager, NRR
J. O. Bradfute, Project Directorate V, NRR
D. L. Proulx, Resident Inspector, WNP-2
K. E. Johnston, Project Inspector
L. C. Carson II, Radiation Specialist

Washington Public Power Supply System

D. W. Mazur, Managing Director
A. L. Oxsen, Deputy Managing Director
J. W. Baker, Plant Manager
G. C. Sorensen, Manager, Regulatory Programs
J. D. Harmon, Maintenance Manager
R. L. Koenigs, Generation Engineering Manager
S. L. McKay, Operations Manager
M. M. Monopoli, Manager, Support Services
R. L. Webring, Plant Technical Manager
L. L. Grumme, Nuclear Safety Assurance Manager
D. F. Pisarcik, Assistant Health Physics and Chemistry Manager
L. D. Sharp, Engineer, Plant Support Engineering
R. Parker, Engineer, Plant Technical

Other Attendees

R. F. Mazurkiewics, Representative, Division of Nuclear Projects, Bonneville Power Administration
J. Zeller, Washington EFSEC Representative

2. Background

On December 20, 1991, an enforcement conference was held in the Region V office in Walnut Creek, California, attended by the individuals identified in paragraph 1. The purpose of this conference was to discuss issues related to the containment atmospheric control (CAC) system, as described in NRC Inspection Report No. 50-397/91-44. Following the enforcement conference, a management meeting was held to discuss issues related to on-line maintenance, the control of switchyard activities, recent radiological protection activities, results of the WNP-2 individual plant examination (IPE), and ongoing licensee initiatives.

3. Enforcement Conference

The conference convened at 8:00 a.m. Mr. Martin described the purpose of the conference, and conference attendees were introduced. Mr. Johnson then reviewed the apparent violations related to the CAC system, as described in Inspection Report No. 91-44.

Mr. Zimmerman summarized the safety and regulatory significance of the findings. He stated that CAC is a safety-related system which is required by the Technical Specification (TS) to perform a safety function after an accident occurs. He noted that the attention paid to this system appeared to have been insufficient to ensure that it would perform its safety function when required. He considered the numerous findings related to the CAC system to be a significant regulatory problem.

Mr. Baker stated that the Supply System did not take exception with any of the facts as stated in report 91-44, but would present additional information concerning the Supply System's decision-making process and the safety significance of the findings.

Mr. Webring presented the Supply System's position on each of the apparent violations. He stated that the Supply System acknowledged the validity of each of the violations, but felt that there was low safety significance regarding each of these violations taken individually. Mr. Sharp then provided an overview of CAC system operation and described the methodology for determining the actual amounts of hydrogen and oxygen generated in the containment following an accident.

Mr. Webring stated that the Supply System considered the CAC system to have been inoperable for an extended period of time because automatic operation was not available. He then presented the Supply System's operating philosophy (which was confirmed by Mr. McKay) that operators had received sufficient guidance to have taken manual control of the CAC system should automatic operation have failed. He further stated that the emergency operating procedures (EOPs) direct operators to initiate CAC early in the accident scenario (at 0.5% hydrogen), so that sufficient hydrogen would probably never have been generated to create an explosive mixture in containment. He therefore concluded that the safety significance of this event was low.

Mr. Webring then discussed the root cause assessment of the event, which revealed that errors in the construction turnover tracking process had

allowed a startup problem report to be lost. This assessment concluded that the wrong type of controller had been installed for automatic control of recycle flow. He further stated that no subsequent review of records was performed to identify this deficiency until the summer of 1991. He then stated that as corrective actions for the inoperability of both CAC flow controllers, the Supply System had:

* Revised the CAC operating procedure to give specific direction for manual operation based on catalyst bed temperature.

* Directed that a safety system functional inspection (SSFI) of the CAC system be performed.

* Revised procedure controls for surveillance testing to incorporate a complete loop check of control room recorders.

* Committed to perform verification and validation of CAC operating and surveillance procedures.

* Developed and conducted a full system functional test.

* Performed a study to determine the feasibility of automatic control based on catalyst bed temperature.

Mr. Webring then discussed the apparent violation related to one train of CAC being inoperable for a period in excess of the TS limits. The Supply System acknowledged the violation, and admitted that poor maintenance practices had resulted in draining of the oil from the "A" CAC blower. However, he stated, this was an isolated occurrence and the Supply System had no reasonable opportunities to identify the problem other than the TS surveillance tests performed at 6-month intervals. The CAC blowers and motors are totally enclosed during operation, and lubricating oil level cannot be routinely verified. He also stated that biweekly rotation of the CAC blowers was not necessary from a metallurgical point of view, and might not have identified the problem because of the 6-second time delay in the motor trip circuitry. He continued on to state that the safety significance of one train of CAC being inoperable was low, because the B train of CAC was available and each train of CAC is capable of removing 100% of the hydrogen generated. In addition, he noted that the likelihood of an event for which CAC is needed is also low.

Mr. Richards questioned the licensee's position that this was an isolated occurrence, because a previous NRC inspection report in 1990 had cited instances in which poor torquing practices among maintenance personnel had resulted in several bolts vibrating loose from safety related valves. In addition, a plug was found missing from pressure transmitter CAC-PT-1A and the nuts for 16 CAC system seismic supports were found to be loose or missing (as discussed in Inspection Report No. 91-44).

Mr. Zimmerman questioned the licensee's determination of safety significance because in this configuration, the CAC system could not withstand a single failure and still perform its safety function. He also expressed concern that the Supply System appeared to be content with surveillance

and preventive maintenance programs that emphasized literal compliance rather than system performance.

Mr. Martin inquired whether or not the licensee periodically calibrated the high temperature (1150 degrees) trip of the recombiner. The licensee replied that they did calibrate this trip.

Mr. Richards also questioned the licensee's position that there had not been adequate opportunities to identify the inoperable train of CAC. He stated that biweekly operation of the fans (as recommended by the vendor) would be prudent, given the fact that the motors and blowers are normally inaccessible, and there is no other known method to ensure that the fans and motors are operable. He also noted that the 6-second time delay could have been taken into account when deciding how long to operate the fans during a biweekly blower rotation.

Mr. Webring then presented the licensee's root cause analysis and prospective corrective actions related to the inoperable Train "A" of the CAC system. The licensee's corrective actions consisted of the following:

* Procedure modifications to provide for blower drain plug tightness verification

* Issuance of a Maintenance and Operations Bulletin to reinforce the importance of assuring proper drain plug installation.

* Performance of an evaluation of the CAC surveillance process, to identify or predict potential failure mechanisms, and verify reliable standby service.

Mr. Webring then summarized the licensee's position regarding the apparent violation for improper makeup of 16 seismic supports. He stated that the Supply System acknowledged the violation, but that there was no safety significance related to these findings, because their evaluation had determined (based on "good engineering judgement") that the CAC system could still withstand a seismic event and remain operable despite the number of deficiencies. He also stated that only 4 of the 16 items could be traced to maintenance activities, and offered that the rest of the deficiencies may have existed since plant startup. Mr. Baker, however, would not rule out unauthorized work as the cause of the 12 remaining problems. Mr. Webring continued by stating that the Supply System was in compliance with the TS requirement to perform a walkdown of the CAC skids every 18 months, although enhancements to the procedure guidance for this requirement could be made.

Mr. Zimmerman stated that this appeared to be another instance in which the licensee was emphasizing literal compliance with the TS, rather than concern with aggressive identification of potential problem areas.

Mr. Webring then summarized the corrective action plan for this apparent violation, under which the licensee would:

* Perform a 100% walkdown of CAC supports, and correct outstanding deficiencies. (Completed)

* Modify the 18-month walkdown procedure to include specific checklist signoffs.

* Initiate a System Engineer program that includes direction for evaluating system material condition. (Completed)

* Provide procedure directions for tightening bolts and pipe clamps.

Mr. Webring then discussed the licensee's position regarding the apparent violations of 10 CFR 50.72 (verbal) and 10 CFR 50.73 (written) reporting requirements. He stated that the Supply System acknowledged that certain elements of the reportability review could have been more expeditious. However, the initial identification of potential concern with the CAC recycle flow controllers not working in automatic was considered by the Supply System to have been conservatively addressed by the initiation of a procedure change shortly thereafter. Mr. Webring said that the Supply System did not want to risk reporting a condition that was not positively verified. Therefore, the Supply System subjected this event to review, further evaluation and confirmation prior to reporting the condition.

Mr. Zimmerman stated that there was no perceived risk inherent to verbally reporting a potential problem. He then emphasized that it was much better for a licensee to report a potential problem based on preliminary information and later retract the report, rather than wait several months before informing the NRC of a problem.

Mr. Baker agreed that it was prudent to keep the NRC informed of potentially safety significant issues, and stated that the NRC would see improvement from the Supply System in this respect.

Mr. Webring then summarized the corrective actions (related to reporting of events) to be undertaken by the licensee, as follows:

* Management will provide additional support for the Compliance Engineering Group during periods of heavy workload (e.g., outages).

* The Supply System will perform an internal audit of the reportability evaluation process, and compare it with peer review practices.

* Management will reemphasize the importance of Support Organizations' timely response to problem evaluation requests.

Mr. Parker then gave a brief summary of the licensee's determination of safety significance based on Probabilistic Risk Assessment (PRA) techniques. He stated that the probability of an event in which CAC would be needed would be very low, because all of the emergency core cooling systems (ECCS) must first fail in order to create a condition in which significant hydrogen generation would occur.

Mr. Sorensen stated that the NRC acknowledges the low probability that CAC would ever be called upon. He stated, however, that CAC is a TS system that must be available to operate if called upon. He then asserted that a lack of attention to the CAC system was apparent, as evidenced by the number of findings related to the system.

Mr. Martin stated that these CAC findings represented a significant regulatory concern. He also stated that the NRC would further review related information provided by the licensee (Enclosure 1 to this report), and that enforcement considerations would be the subject of future correspondence. He thanked the licensee for their presentations, and concluded the enforcement conference at 10:50 a.m.

4. Open Management Meeting

Mr. Martin convened the management meeting at 11:00 a.m. and stated that the topics to be discussed were important to ensure that the licensee does not encounter mistakes made by other utilities in the recent past.

Mr. Piscarcik presented the root cause analysis and corrective actions associated with two problems in the area of radiological protection. These were an administrative overexposure event and the third suspension of the Supply System's radioactive waste shipping license.

Next, Mr. Baker briefly discussed the licensee's intention of changing their Final Safety Analysis Report (FSAR) commitment that the Supply System will not voluntarily enter into TS action statements to perform maintenance. He stated that their decision-making process for determining whether or not to remove a safety system from service will be based on PRA techniques and on a thorough process that emphasizes the overall impact on safety. This program for performing on-line maintenance will be phased in gradually, and on-line maintenance will be performed only if it can be demonstrated that an overall improvement in safety will result, taking into account the negative impact of removing safety systems from service.

Mr. Martin stated that he appreciated the licensee's efforts to develop a maintenance program based on a well thought-out process. He stated that these initiatives are important because other instances have been noted in which licensees took credit for very optimistic equipment availability factors in their Individual Plant Examination (IPE), but did not take into account the larger amount of time the equipment was removed from service to perform maintenance.

Mr. Baker then discussed the Supply System's control of switchyard activities, noting that BPA does a large portion of the work in the switchyard. He also discussed the role BPA had in the loss of 500KV event at WNP-2 during the summer of 1991. He characterized this event as a "near miss" with respect to a loss of offsite power.

Mr. Martin cautioned the licensee not to be complacent and think that a loss of offsite power could not occur at WNP-2, because two similar events involving a loss of offsite power had occurred in Region V during the past year. He also stated that the licensee needs to ensure that the lessons learned from those two events are communicated to the working level.

Mr. Koenigs then discussed the licensee's progress in completing an IPE. He stated that no failure sequences with unexpected safety significance had thus far been identified.

Mr. Oxsen next discussed recent and ongoing licensee initiatives. Two initiatives undertaken by the licensee that the licensee felt were most significant were the work process/efficiency study performed jointly by the Supply System and a consultant, and the development of structure trees for goal-oriented management techniques.

Mr. Martin stated that he appreciated these efforts and the Supply System's desire to improve. He added that several licensees have noted that many personnel performance problems can be traced to overly complicated work processes. He said that he looked forward to reviewing the results of the efficiency study.

Mr. McKay then discussed recent and ongoing initiatives related to the Operations department. He stated that despite the operator requalification program setback earlier this year, the Operations Department is dedicated to continued improvement. He briefly summarized the Operations Watch program, future staffing levels, and actions in progress to keep training in step with industry standards. In addition, he briefly discussed lessons learned from the April 1991 failure of the operator requalification program.

Mr. Martin noted, as the most important lesson learned from that experience, that it is imperative that licensee management have 100% confidence that their operators can and will use the EOPs to successfully mitigate the consequences of an accident.

Mr. Piscarcik next discussed plant performance and initiatives recently undertaken in the area of Health Physics and Chemistry. He summarized the performance indicators tracked by the Supply System for this area. He stated that WNP-2 has improved in this area and will continue to do so in the future.

Mr. Harmon then summarized recent and ongoing initiatives in the maintenance area. He noted that the maintenance staff has directed significant resources toward maintenance, including a reliability centered maintenance (RCM) program, improved work planning and work controls, thorough maintenance training, and a procedures upgrade program.

Mr. Webring discussed the status of ongoing initiatives for the Plant Technical Staff. He briefly summarized the system engineer position expectations and some of the recent preliminary successes of this newly initiated program.

Mr. Martin indicated that in the interest of time, other licensee initiatives related to Emergency Preparedness, Security, and Licensing and Assurance could be presented at a later date and possibly discussed with the resident staff at the site. Mr. Martin thanked the licensee for their presentations, and adjourned the meeting at 1:30 p.m.

ENFORCEMENT CONFERENCE PRESENTATION

CONTAINMENT ATMOSPHERIC CONTROL SYSTEM

Washington Public Power Supply System

December 20, 1991

INTRODUCTION

- Introductions

- Management Overview

- Brief Synopsis of Presentation

MANAGEMENT OVERVIEW

- Considered to be a Serious Issue

- Presents Concern Regarding Certain Prior, and Some Present, Activities

- Requires Dedicated Follow-Through on Open Corrective Actions

- Commit to Perform an Assessment to Identify Those Characteristics of the CAC System Which Produced the Identified Conditions and Determine Whether Any Other Systems May Possess Similar Characteristics

- Initiate Comprehensive Evaluations of Any Additional Systems, Including SSFI if Appropriate

OVERVIEW

CAC SYSTEM DESCRIPTION-

- System Configuration
  - Controllers
  - Motor and Blower
  - Recombiner
- System Purpose
- Surveillance Process
- Unique Characteristics Affecting Testing/Surveillance

SUMMARY OF APPARENT VIOLATIONS

- Inspection Report No. 50-397/91-44 Describes Four Apparent Violations, Involving the Following Topics and Regulatory Standards:

  - Operability of CAC Trains in View of Original Installation of Recycle Flow Controllers - Technical Specifications, Section 3.6.6.1

  - Operability of CAC Upon Loss of Lubricating Oil From A Train Blower Housing - Technical Specifications Sections 3.6.6.1 and 3.0.3

  - Assembly of Seismic Supports for the Containment Atmospheric Control System - 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings"

  - Timing of Reporting Recycle Flow Controller Findings - 10 CFR Sections 50.72 and 50.73

CAC OPERABILITY WITH ORIGINAL FLOW CONTROLLERS

Position Regarding Apparent Violation

- Acknowledge Automatic Control Unavailable to Control Recycle Flow - Original Plant Configuration
  - Identified during Supply System program to verify instrument setpoints
  - Potential for hydrogen mitigation maintained due to failure mode and system lineup
- Manual (Control Room) Operation Available and Reasonable to Postulate Based on Information Available to Operators
- Manual (Control Room) Operation Procedurally Established in August 1991, Prior to Startup
  - Additional requirement to control bed temperature subsequently identified and implemented
- Technical Specification Surveillance Requirements to Confirm Operability Had Been Followed
  - Minor discrepancy in channel calibration
  - Need to strengthen walkdown process

CAC OPERABILITY WITH ORIGINAL FLOW CONTROLLERS

Safety Significance

- Actual Safety Significance Low
  - Unlikely circumstances for combustible gas generation
  - Manual control available, consistent with existing training and procedure
- Specific Mechanisms for Addressing Combustible Gas Conditions (Design Basis and Non-Mechanistic Assumptions)
  - Design premised on postulated combustible gas generation predicated on non-mechanistic assumptions of 10 CFR 50.44, and guidance of Regulatory Guide 1.7
  - Design assumption for post accident initiation of recombiner to address worst case non-mechanistic generation assumptions - 6 hours
  - EOP's direct start of recombiners at 0.5% hydrogen concentration

CAC OPERABILITY WITH ORIGINAL FLOW CONTROLLERS

Safety Significance (Continued)

- Design Basis Accident - System Operation Likely Adequate to Prevent Combustible Gas Concentration

  . Early (i.e., at low concentration) establishment of maximum recombination

  . Early turnaround of generation

- Regulatory Guide 1.7 Generation Assumptions - Methods Remained Available to Address Combustible Gases

  . Immediate initiation of CAC

  . Recombiners prompt trip (high bed temperatures)

  . Annunciator prompts manual control

    - authorized by procedure
    - sufficient information to establish manual control
      - bed temperatures
      - recycle rates
      - combustible gas concentrations

CAC OPERABILITY WITH ORIGINAL FLOW CONTROLLERS

Safety Significance (Continued)

- Sufficient time/opportunity to obtain additional expertise
  - approximately 5.5 hours
  - establish TSC and TDC centers - expertise and implementation of hydrogen control measures

CAC OPERABILITY WITH ORIGINAL FLOW CONTROLLERS

Root Cause Determination

- Detailed Review of Prior Records Indicate an Error/ Oversight in the Construction Turnover/Tracking Process
  - PED Initiated by A/E to Replace Controllers - Prior to Original Startup
  - PED Not Entered on Tracking System
- Human Error/Oversight Regarding Tracking and Procurement
  - These Items Not Identified by Contractor as Already Procured
  - Other Safety-Related PED's Identified in Contractor Correspondence Which Included This Item Were Closed - All Identified PED's are Being Reviewed to Assure Closure
  - Supply System Took Over Class 1E Purchasing Responsibility Prior to Original Startup
    - PED not entered into tracking system
    - Procurement apparently not initiated

CAC OPERABILITY WITH ORIGINAL FLOW CONTROLLERS

Corrective Actions

- Immediate Corrective Actions
  - Procedural Revision to Establish Manual Operation From Control Room - Prior to Startup (August 1991)
  - Further Evaluation Indicated Direct Observation of Bed Temperature Warranted - Procedurally Established Operator Observation (November 1991)
- Prospective/Preventive Corrective Actions
  - Plant Management Directed SSFI for CAC System - Design, Testing and Operational Features (Current Schedule - January 31, 1992)
    - Results of investigations, including SSFI, will be discussed with staff
  - Revising Procedural Controls to Incorporate Complete Loop Check on Control Room Recorder

CAC OPERABILITY WITH ORIGINAL FLOW CONTROLLERS

Corrective Actions (Continued)

- CAC Operating Procedures to Include Verification and Validation Process (Current Schedule - February 28, 1992)

- CAC Surveillance Procedures to Include Verification and Validation Process (Current Schedule - Prior to R-7 Outage)

- Develop and Conduct System Functional Test

- Feasibility Study to Be Performed to Determine Whether Automatic Control Is Feasible With Alteration of Feedback Loop (E.g., Bed Temperature)

CAC TRAIN A OPERABILITY UPON LOSS OF LUBRICATING OIL

Position Regarding Apparent Violation

- Acknowledge One Train Inoperable Due to Loss of Lubricating Oil Causing Blower Shaft to Seize

- Condition Did Not Exist Prior to Successful December 8, 1990 Surveillance Testing (6 Month Heater Operability Surveillance)

- System Operability Required Until Plant Shutdown on April 12, 1991

- Discovered During System Operability Test on September 3, 1991 as Part of 18 Month Operability Test Prior to Restart

CAC TRAIN A OPERABILITY UPON LOSS OF LUBRICATING OIL

Safety Significance

- Actual Safety Significance Low
  - CAC Train B available (as previously described)
    - potential for hydrogen mitigation retained in system lineup
    - manual control available to optimize recombination rate
  - Likelihood of event requiring system operation low

CAC TRAIN A OPERABILITY UPON LOSS OF LUBRICATING OIL

Root Cause Determination

- Apparent Isolated Oversight in Tightening Plugs During Blower Reassembly
  - Additional plugs on both blowers properly installed
  - Few examples of other missing/loose plugs in plant
    - PER search (1989 to present) - only one other missing plug (valve leakoff)
    - Currently aware of one other missing plug (CAC-PT-1A)
- Drain Plug Apparently Dislodged in Connection With December 1990 Surveillance Testing
- Overall Process for Assuring Plug Installation and Tightness Adequate
  - Experience, as indicated above
  - Installation and surveillance process - skill of craft

CAC TRAIN A OPERABILITY FOLLOWING LOSS OF LUBRICATING OIL

Corrective Actions

- Immediate Corrective Actions

  - Upon Failure of Blower, a New Unit Was Installed Prior to Startup

  - Drain Plugs (Both Trains) Verified Tight Prior to Startup and Lock Wired in Place

  - Analysis of Shaft Rotation Recommendation in Manufacturer's Literature

  - Analysis Determined Creep and Sag Not Reasonable Phenomenon for These Components

    . Small mass, ambient conditions, time period

    . Vendor unable to identify technical basis for original recommendation (does not exist in current service manuals)

CAC TRAIN A OPERABILITY FOLLOWING LOSS OF LUBRICATING OIL

Corrective Actions (Continued)

- Rotation potentially would not have identified condition
  - blower enclosed - unavailable for manual rotation
  - appropriate mechanism - "bump"
  - inoperability likely to go unnoticed with 6-second low flow time delay (appropriate for start-up)

- Prospective/Preventive Corrective Actions
  - Procedural modifications for blower drain plug tightness verification
  - Issuance of MOB to reenforce importance of assuring proper drain plug installation
  - Evaluating adequacy of CAC Surveillance Process
    - To identify or predict potential failure mechanisms
    - To identify reliable standby service

SEISMIC SUPPORT ASSEMBLY

Position Regarding Apparent Violation

- Acknowledge Surveillance Did Not Provide Physical Verification of Fasteners (Nuts) Tightness

- Existing Surveillance in Accordance With Technical Specification Visual Exam
  - Implemented through site procedure
  - Conducted at least every 18 months
  - Includes visual examination to identify abnormal conditions such as loose wiring or structural connections, deposits of foreign materials, etc.

SEISMIC SUPPORT ASSEMBLY

Safety Significance

- Minimal Actual Safety Significance
  - Involved Loose or Missing Hardware (Primarily Jam and Lock Nuts)
  - NRC and Supply System Identified (Combined) 15 Items
  - Operability Evaluations Performed
    - System-wide operability determination
    - Individual component deficiencies' implications for operability
  - Engineering Judgement Concluded That Original Seismic Design Bounded Field Conditions

SEISMIC SUPPORT ASSEMBLY

Root Cause Determination

- Skid Design and Limited Operational History Eliminates Vibration As a Cause

- Only 4 of 15 Items Potentially Affected by Maintenance Activities (Review of Maintenance History)

- Apparent Work Practice/Oversight During Initial Installation

  - For at least 11 of 15 items

SEISMIC SUPPORT ASSEMBLY

Corrective Actions

- Immediate Corrective Actions
  - Response by Plant Focussed on Specific Identified Conditions
  - Ultimate Response Comprehensive (100% Walkdown), Within Reasonable Time - Included Fasteners/Wiring, Application of Torque Seal
- Prospective/Preventive Corrective Actions
  - Procedural Modifications for Future (18 Month) Blower Surveillance Will Be Enhanced, Including Specific Check-List Sign-Off
  - System Engineering Program Recently Initiated - Includes Direction for Evaluating System Material Condition, Including Fasteners, Connections, etc.
  - Direction (To Be Documented by Procedure for CAC) for Tightening Bolts and Pipe Clamps

REPORTING CAC FINDINGS

Position Regarding Apparent Violation

- Acknowledge Certain Elements of Review Could Have Been Conducted More Expeditiously

- Timing Not Inconsistent With Regulatory Guidance Upon Determination of Reportable Condition

- Timing a Result of Need to Conduct Evaluation of Condition

- Response to Original Finding Believed Conservative, Independent of Reporting Evaluation

REPORTING CAC FINDINGS

Safety Significance

- No Actual Safety Significance

- Decision to Institute Procedural Modifications Prior to Startup Was Believed Conservative, Independent of Reporting Evaluation

REPORTING CAC FINDINGS

Root Cause Determination

- Initial Identification (08/07/91) of Potential Concern, Considered to Have Been Conservatively Addressed (08/29/91) Prior to Startup and Issue Tracked for Reportability Evaluation

- Reasonable Questions Regarding Original Assessment Required Evaluation

- Preliminary Determination of Reportability (10/10/91) by Procedure

- Subject to Review, Sought Further Evaluation and Confirmation

- Even Though Confirmation Ultimately Unavailable - Decision Made That Event As Then Understood Should Be Reported (10/31/91) and Issued LER Within 30 Days

REPORTING CAC FINDINGS

Corrective Actions

- Appropriate Enhancements Warranted

- Site Management Recognizes Need For Additional Support in Area During Period of Heavy Work Load - Specific Support During Outages

- Commit To Internal Audit Of Process And Obtain Understanding Of Peer Practices

- Reaffirm, With Management Direction, Importance Of Support Organizations' Timely Response to Evaluation Requests

ENFORCEMENT CONSIDERATIONS

CAC Operability With Original Flow Controllers

- Acknowledge Configuration Inadequate for Automatic Control

- However, Actual Safety Significance Low

  - Likely available for design basis accident conditions

  - Manual control available for either DBA or non-mechanistic assumptions

- If Considered for Escalated Action, Exercise of Discretion to Refrain From Imposing Civil Penalty - or Mitigation of Any Proposed Penalty - Warranted

  - Licensee - identified problem as part of voluntarily established special program to verify setpoints

  - Not Readily Identified During Routine Testing and Surveillance Activities

    - Adherence to technical specification surveillance provisions provides presumption of operability (i.e., no basis for operability concern)

ENFORCEMENT CONSIDERATIONS

CAC Operability With Original Flow Controllers (Continued)

- Prompt and extensive corrective actions
- Immediate actions intended to establish safe plant configuration prior to startup
- Supplemental actions and preventive measures followed
- No prior notice of similar CAC or controller problems
- Apparent isolated occurrence involving tracking/procurement of Class IE components during construction turnover

ENFORCEMENT CONSIDERATIONS

CAC Train A Operability Upon Loss of Lubricating Oil

- Acknowledge Single Train Inoperable From December 1990 to April 1991

- However, Low Actual Safety Significance

  - Low probability event

  - Availability of other train (likely sufficient for design basis accidents, also manual operation capability for either DBA or non-mechanistic assumptions)

- If Considered for Escalated Action, Exercise of Discretion to Refrain from Civil Penalty - or Mitigation of Any Proposed Penalty - Warranted

  - Licensee - identified in course of proper application of existing surveillance mechanisms

  - Licensee took prompt and extensive corrective action to provide assurance of proper installation and verification of oil plugs

CORRECTIVE ACTIONS
ENFORCEMENT CONSIDERATIONS

- No prior notice of similar problem
- Not willful or involving breakdown in management controls
- Infrequent occurrence
- Although condition existed for period of time, no opportunity to identify during that time given closed system and satisfactory performance of surveillance test in December 1990

ENFORCEMENT CONSIDERATIONS

Seismic Support Assembly

- Appendix B, Criterion V Provides Only General Criteria
- Reasonable Procedures/Process in Place, Implementation Criteria Warrant Enhancement
- If Violation, Independent Severity Level IV Condition
  - Minimal Actual Safety Significance
  - Existing Surveillance Procedures Reasonable, Acknowledge Possible Enhancement To Address Unforseen Prior Existing Conditions
  - Principal Cause Was Apparent Oversight in Original Skid Installation
- Unrelated to CAC Operability Questions

ENFORCEMENT CONSIDERATIONS

Reporting CAC Findings

- No Apparent Violation Of Regulatory Requirement

- Reported Within Time Period Established Following Determination Of Valid Observation

- NRC Guidance Contemplates Circumstances in Which Reasonable Period of Evaluation Necessary to Confirm Validity Of Concern

  - Technical questions regarding system status required evaluation to confirm accuracy of original finding

  - Action to establish manual operation viewed as a conservative action - unrelated to reportability

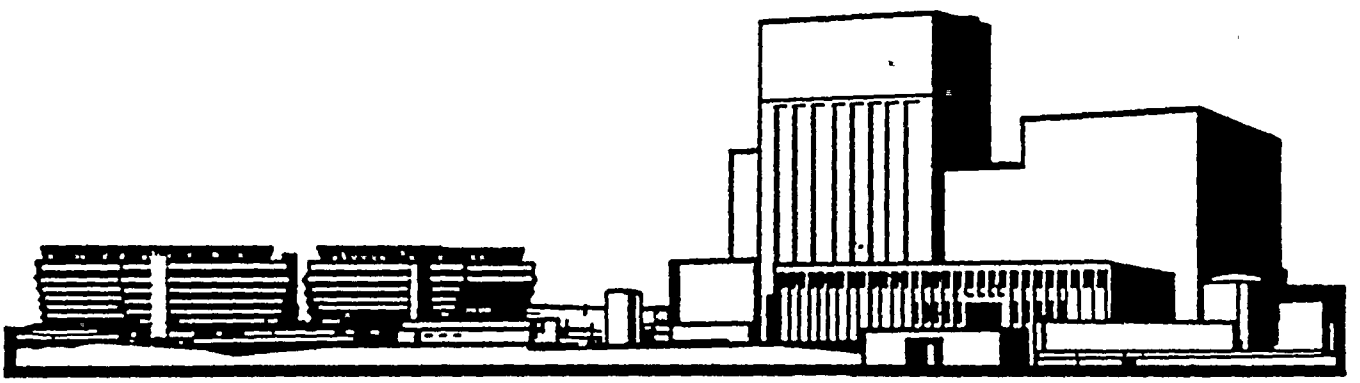
- If Violation, Independent Level IV or Level V Condition Given Absence Of Safety Significance

NRC/
SUPPLY SYSTEM

WALNUT CREEK, CALIFORNIA

DECEMBER 20, 1991

MANAGEMENT MEETING



WASHINGTON PUBLIC POWER
SUPPLY SYSTEM

NRC/SUPPLY SYSTEM
MANAGEMENT MEETING
DECEMBER 20, 1991
WALNUT CREEK, CALIFORNIA

AGENDA

- Opening Remarks - NRC..... J. B. Martin
- Opening Remarks - Supply system..... D. W. Mazur
- Issues of Current NRC Interest
  - On-Line Maintenance..... W. W. Waddel
  - Control of Switchyard Activities..... J. W. Baker
  - Radiation Protection Issues..... D. J. Pisarcik
  - Status of Notable Findings from IPE..... R. L. Koenigs
- Recent Licensee Initiatives
  - Opening Remarks..... A. L. Oxsen
  - Overview of Plant Performance..... J. W. Baker
  - Plant Operations..... S. L. McKay
  - Radiological Controls..... D. J. Pisarcik
  - Maintenance/Surveillance..... J. D. Harmon
  - Engineering..... R. L. Koenigs
  - Technical Support..... R. L. Webring
  - Emergency Preparedness and Security..... M. M.Monopoli
  - Safety Assessment/Quality Verification..... L. L. Grumme

VOLUNTARY ENTRY INTO TSAS TO PERFORM WORK DURING POWER OPERATION

- Development of WNP-2 policy
- Essential policy elements
- Implementation procedure

DEVELOPMENT OF WNP-2 POLICY

- Evolving for over one-year
- Participation in BWROG Committee
- Reviewed selected utility programs
- Reviewed NRC inspection criteria
- Broad internal organizational inputs and reviews

ESSENTIAL POLICY ELEMENTS

- Improve safety
- Minimize risks during time in TSAS
- Management involvement
- Rigor and discipline in planning
- Monitor performance and impacts

IMPLEMENTATION PROCEDURE

- Improve Safety
  - Written justification
    - Reduce potential corrective maintenance OOS time
    - Improve reliability
  - Weigh OOS time versus improvements
- Minimize Risks During Time in TSAS
  - Engineering inputs based on scope and nature of work.
  - Review of work on other systems
  - Maintain times less than TSAS allowable
  - Well defined scope
  - Contingency plans

IMPLEMENTATION PROCEDURE
(Continued)

- Management Involvement
  - Three levels of approval depending on scope and nature of work
  - Reports on past performance and upcoming actions
  - Shift Manager has ultimate decision authority

IMPLEMENTATION PROCEDURE
(Continued)

- Rigor and Discipline in Planning
  - Maintenance work package complete
  - Parts and tools staged and verified
  - Trained craft available
  - Operability tests identified
  - Pre implementation planning meeting

IMPLEMENTATION PROCEDURE (Continued)

- Monitor Performance and Impacts
  - Log of all voluntary entries into TSAS
  - Monitor safety system performance indicators
  - Engineering evaluation of system availabilities for comparison to PRA studies

CONTROL OF VEHICLE MOVEMENT IN WNP-2 TRANSFORMER YARD

- The transformer yard is kept locked during normal plant operation

- Signs posted on the entrance of the yard require anyone entering to first contact the Shift Manager

- Additional requirements are made for persons needing to operate a vehicle in the transformer yard. The requirements are posted as such:

WARNING

Maneuvering of vehicles within this yard is to be directed by an escort from the Plant Electrical Maintenance Shop or designee

- **Safety Watcher**

  - **A competent fully qualified electrical employee who knows and understands the safety rules and the electrical hazards**

  - **He is responsible for limiting the movement of men or equipment to prevent electrical contact accidents; additionally, he shall stop work which he considers electrically hazardous**

  - **A safety watcher is required when motor driven equipment is being moved or operated in the vicinity of high voltage circuits**

- **Grounding Practices**
  - All vehicles used for performing work in the transformer yard are solidly grounded before work begins

- **Equipment Operation**
  - All outriggers are always extended before boom operation begins
  - Only qualified operators may operate any given piece of equipment
  - Boom operators are monitored by the Safety Watcher
  - Work supervisors are clearance holders and must be present when work is in progress

Control of Vehicle Movement in WNP-2 Transformer Yard

- The transformer yard is kept locked during normal plant operation.

- Signs posted on the entrance of the yard require anyone entering to first contact the Shift Manager.

- Additional requirements are made for persons needing to operate a vehicle in the transformer yard. The requirements are posted as such:

> **WARNING**
>
> Maneuvering of vehicles within this yard is to be directed by an escort from the Plant Electrical Maintenance Shop or designee.

- Bonneville Power Administration holds a maintenance contract with the Supply System for maintaining all equipment in the Transformer Yard. Therefore the majority of vehicle movement in the yard is done by BPA. The BPA substation maintenance crews are trained and experienced, and daily perform their work inside energized substations and are cognizant of the existing hazards and needed precautions to avert accidents.

- BPA personnel are trained to operate and maneuver vehicles in a substation in the following manner:

- A safety watcher is required when motor driven equipment is being moved or operated in the vicinity of high voltage circuits and the possibility of accidental contact exists. This consists of someone outside of the vehicle in visual contact with the driver who guides and directs the vehicle past any hazardous areas.

Definition: Safety Watcher

A competent fully qualified electrical employee who knows and understands the safety rules and the electrical hazards involved in specific work situations. Primarily he is responsible for limiting the movement of men or equipment to prevent electrical contact accidents. Additionally, he shall stop work which he considers electrically hazardous.

- BPA has a significantly lower accident rate than the rest of the industry, and the Snake River Area has a lower rate than the overall utility rate.

Other Vehicle Operators:

- Supply System vehicles occasionally enter the yard for the following reasons:

  Warehouse personnel delivering nitrogen bottles.
  Carpenters delivering scaffolding material.
  Diesel fuel delivery for special needs.

- These employees must contact the Plant Electrical Maintenance Shop for an escort to perform the function of the Safety Watcher.

- Supply System maintenance electricians bring a bucket truck in the yard to sample insulator contamination on dummy pedestals periodically, and bring their own Safety Watcher.

- Security vehicles are banned from entering the transformer yard since any activity that security must accomplish with the boundaries of the yard can be done on foot.

Transformer Yard Design

- The WNP-2 Transformer Yard contains three high voltage systems, 500kV, 230kV, and 115kV.

- The 500kV system is used as an offsite source when backfed during outages. There are 21 pedestals that support the buswork from the ground.

- The 230kV system is used for plant startup. It is typically out of service for only three days out of the year, and there is no buswork supported from the ground associated with this system.

- The 115kV system is the backup source that supplies critical loads in an emergency. It has 3 pedestals that support the buswork from the ground. The location of these structures are such that they are protected. No vehicles approach the location of this system unless the system is de-energized for maintenance.

Grounding Practices

All vehicles used for performing work in the transformer yard are solidly grounded before work begins. This is by procedure (both BPA and Supply System) and rigidly observed.

Equipment Operation:

All outriggers are always extended before boom operation begins. Only qualified operators may operate any given piece of equipment. Boom operators are monitored by the Safety Watcher. Work supervisors are clearance holders and must be present when work is in progress.

Supply System/BPA Communication

- BPA personnel are trained annually to Supply System procedures applicable to them.
- Nuclear Station Operating Experience is shared directly with the BPA substation foreman as it applies to offsite sources.
- "Supply System/BPA Maintenance and Operations Agreement" documents the guidelines by which we work together.

RADWASTE PROGRAM ISSUES

- Site Use Permit Suspensions

  - 8-31-90 Incorrect Dose Listed On Shipping Manifest
    Reinstated: 10-8-90
    Reference: 2-90-676

  - 1-31-91 Failure To Stabilize Class B Shipment
    Reinstated: 4-11-91
    Reference: PER 2-91-082, NOV 50-397/ 91-07-03

  - 10-13-91 Inadequate Survey Of Shipped LSA Box - Manifest Not Of Time Exposure Rates
    Reinstated: 11-4-91
    Reference: PER 2-91-846

RADWASTE PROGRAM ISSUES

- Assessment Activities
  - Plant QA
    - Waste minimization
    - Housekeeping
    - HP/laborer practices
  - Corporate QA
    - Sorting issues
    - Poor work practices
    - Waste minimization
    - RWP controls
  - ARI
    - Organization
    - Radwaste minimization
    - Transport vehicles
    - Resin drying
    - Mixed waste

RADWASTE PROGRAM ISSUES

- Personnel And Organization Changes
  - Radwaste supervisor selected
  - Organizational development in progress
    - Radwaste coordinator
    - Decon coordinator
    - Augmented resources for mixed waste and environmental issues
- Planned Improvements
  - Waste minimization efforts
  - Long-term radioactive material storage
  - Mixed waste

WNP-2 ADMINISTRATIVE OVEREXPOSURE EVENT

- Causal Factors
  - Work processes
  - Communication
  - Dosimetry placement
  - Technician performance
- Immediate Actions
- Long-Term Actions
- Timeliness of Formal Root Cause

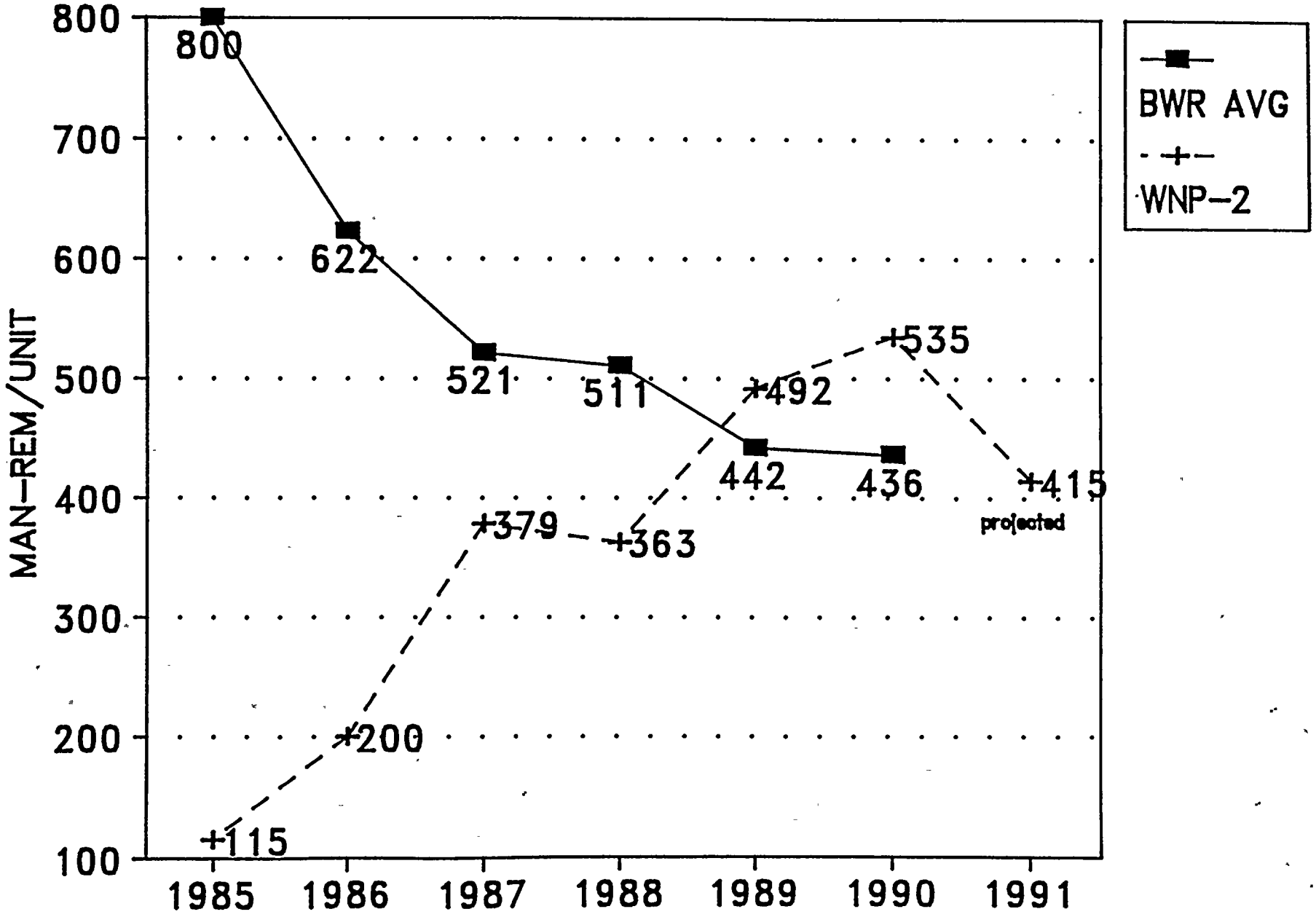
HEALTH PHYSICS PROGRAM ISSUES

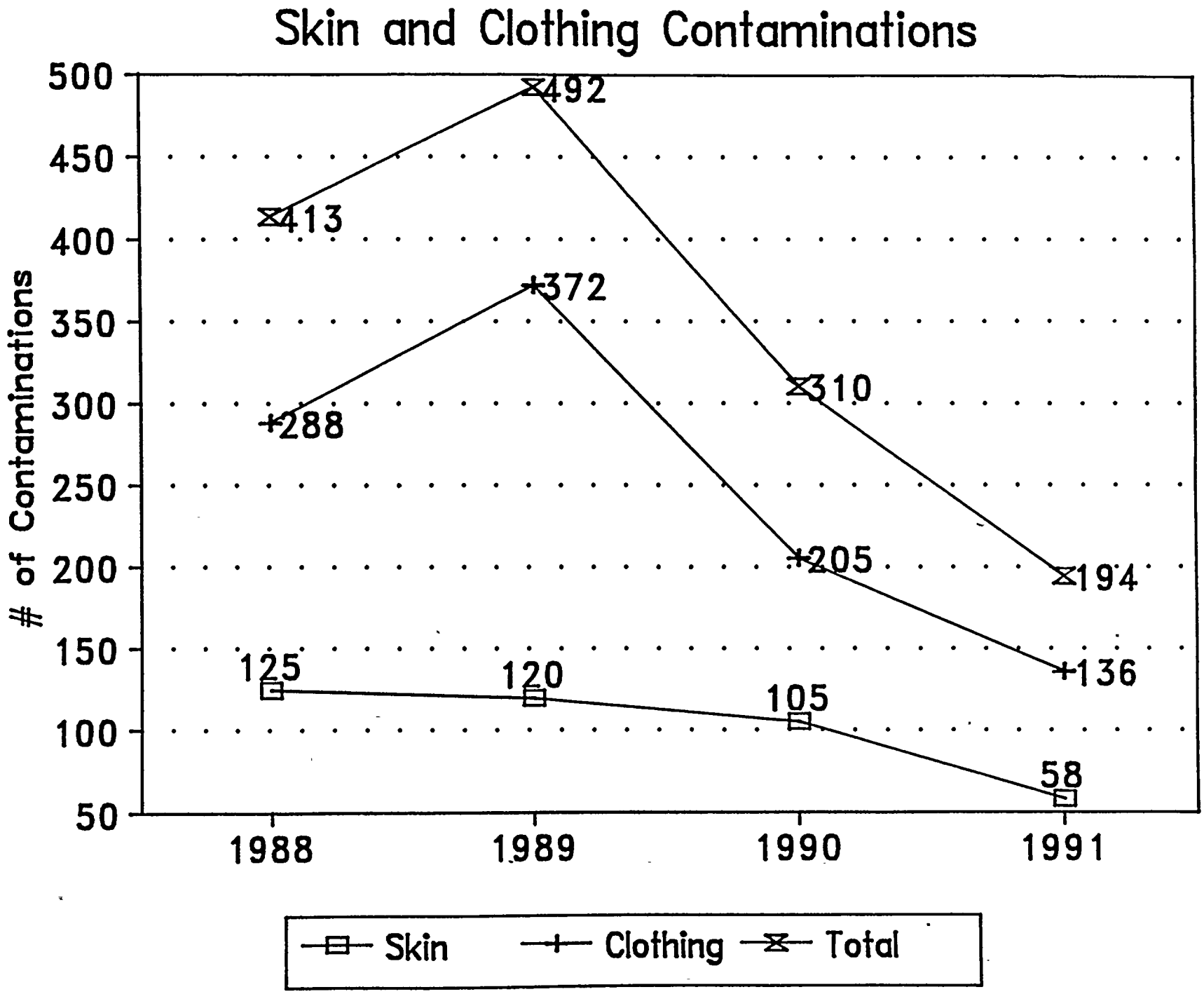
- Occupational Radiation Exposure
  - Chemical decon for R-7
  - EDR/FDR flushes
  - Co-60 minimization
  - Hot spot tracking/trending
  - Soft shutdown technique
  - Health physics planning group
  - Senior site ALARA committee
  - RER upgrades/access control

HEALTH PHYSICS PROGRAM ISSUES

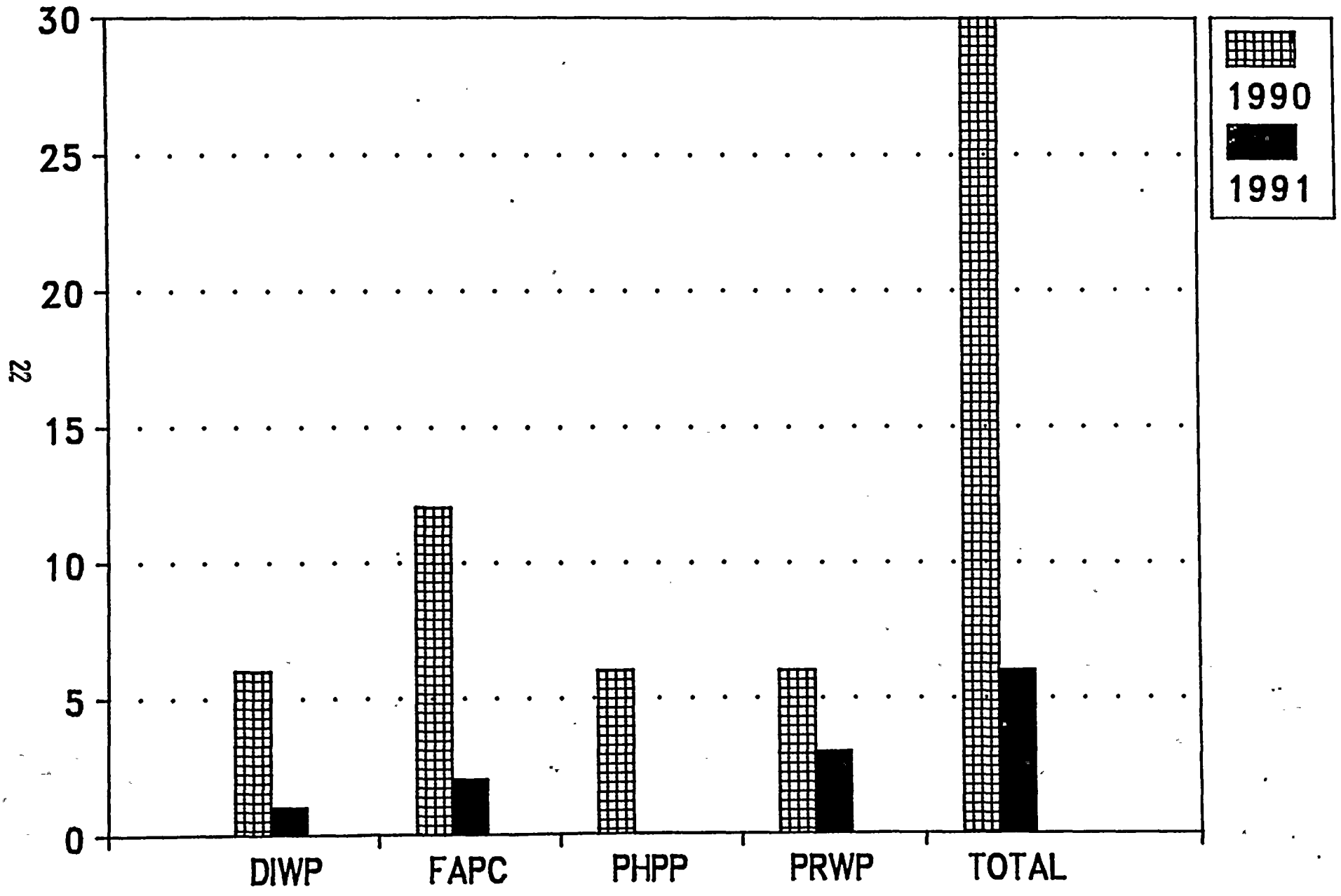
- Personnel Performance
  - Skill-based training for radiation workers
  - Communication of management expectation
  - Observation evaluation program
  - Procedure upgrade
  - Information postings
  - Health physics sponsors
  - Personally preventable events

STATION DOSE / CALENDAR YEAR




Skin and Clothing Contaminations
# of Contaminations
500
450
400
350
300
250
200
150
100
50
1988
1989
1990
1991
413
492
310
194
288
372
205
136
125
120
105
58
Skin
Clothing
Total

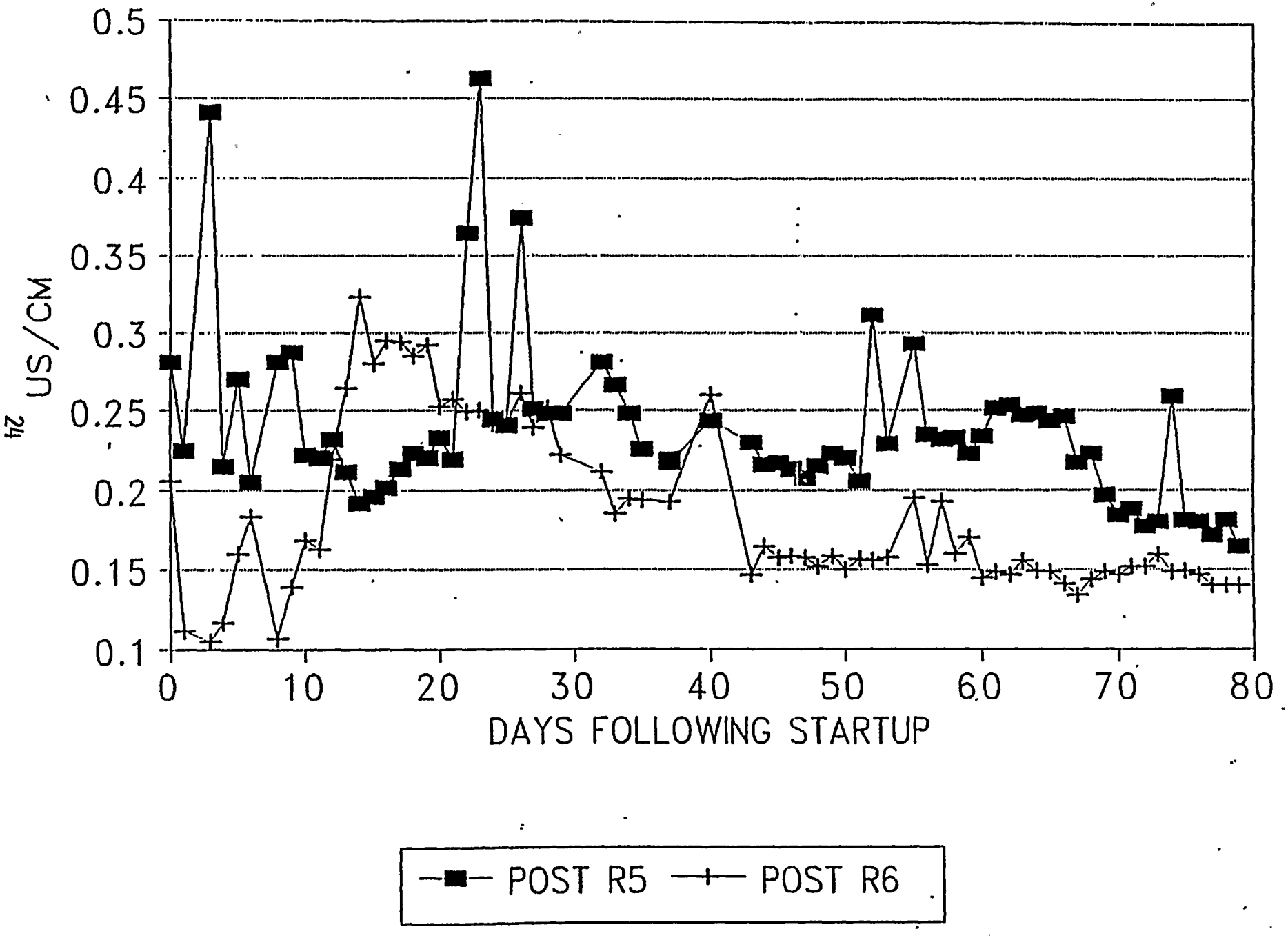
RADIOLOGICAL OCCURRENCES BY CATEGORY



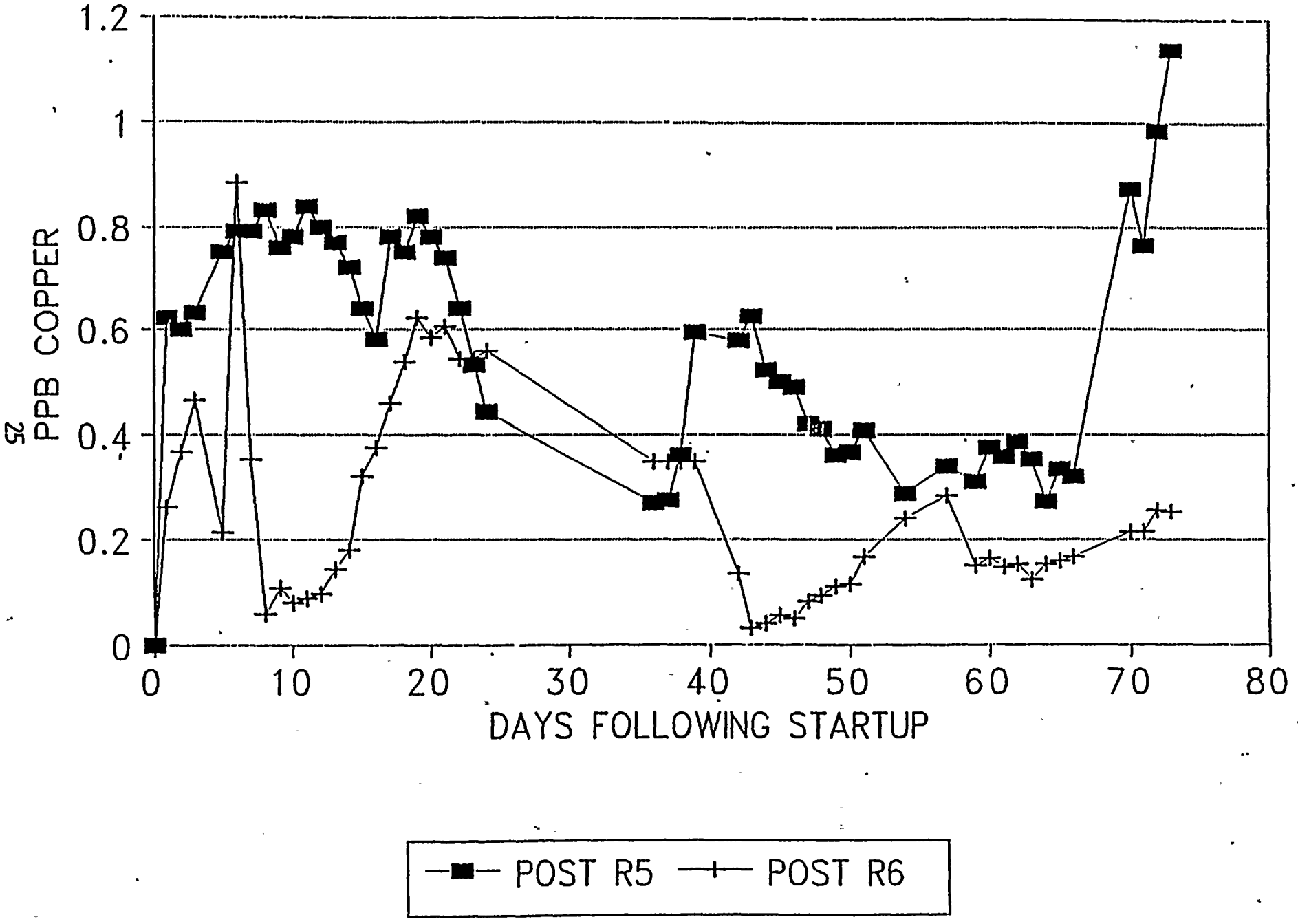
PLANT CHEMISTRY IMPROVEMENTS

- Control of Reactor Start Up Chemistry
- Make Up Water Treatment Over Haul
- Condensate Demineralizer Upgrade
- Scheduled Inline Instrumentation Upgrade

REACTOR CONDUCTIVITY



DEMINERALIZER COPPER EFFLUENT



- Procurement Initiative Upgrade
  - Procedures revised
  - Detailed Materials Procurement Handbook completed
  - Region V Procurement/Quality Audit conducted satisfactorily
  - Resources assigned
  - Core Integration Project/database for procurement process
  - Component Safety Classification review underway
  - Testing of component performance characteristics underway
  - New Receipt Inspection processes in place

- Design Basis Documentation Program
  - Format content and scope revisited, redefined
  - Production of documents per plan/schedule
  - Issues identified are resolved upon discovery whenever possible
  - Includes verification and limited validation process
  - Prioritization and tracking process in place for bases omissions
  - Setpoint Methodology/Design Bases evaluation underway

- Probability Risk Assessment
  - Methodology and analyses well underway and on schedule
  - Significant coordination with Maintenance's Reliability Centered Maintenance (RCM) program
  - Plant specific component failure rate data used
  - Integrating methodology into our safety evaluations for 50.59 determinations
  - Planning for External Events analysis with Supply System resources following completion of initial IPE

- Backlog Reduction Program
  - Resources assigned
  - Prioritization methodology established
  - Backlog characterization underway
  - Open item/issues being resolved

- Self-Assessment Initiatives
  - Duke Engineering contracted to assess Engineering organization; report in hand, working on issues
  - Major organizational effectiveness evaluation
  - Directorate-initiated functional realignment process implemented to balance workloads, improve management involvement, and align resources with needs
  - Five Quality Action Teams focusing on improving the quality and efficiency

ENGINEERING AND TECHNICAL SUPPORT INITIATIVES

- Safety Evaluation (50.59) Improvements
  - Procedural upgrades
    - Multi-organizational committee (included Licensing and Assurance, Training and Plant) developed guidelines
    - Committee effort continues under Engineering sponsorship
    - New Plant and Engineering procedures in place
    - Applied to design and operational changes/sequences

- Personnel training

  - 50.59 short course (2-1/2 days) developed and given to approximately 250 people
  - 50.59 long course (9 days) on safety evaluations and licensing basis (NSSS vendor and staff specialists developed; 50 people (Engineering, Licensing & Assurance, Operations, Maintenance, Training and Technical) have completed; additional classes planned)

- Safety evaluation

  - Performer must have completed short course
  - Reviewer must have completed both the short and long courses
  - Dedicated group within Engineering

■ Procurement Initiative

- Procurement Initiative
  - Assessment of NUMARC improvements complete (6/5/90)
    - Critical characteristics identification and verification in place
    - Action plan for improvements (9/20/90)
    - Region V self-assessment complete (7/10/91)
    - Self-assessment action plan complete (9/3/91)
    - Most action items complete, expect completion prior to 7/1/92
    - Second Region V self-assessment planned (3/92)

- Improvements

  - Significant revision to procurement procedures (8/90 and 4/91), remaining (PDS-4, EI 2.18, EI 2.8) to be completed by 3/1/92
  - Developed detailed procurement engineering handbook (basically complete - continuous improvements made)
  - Significant resource shift and alignment of function to Engineering
  - Definition and control of critical characteristics
  - Engineering involvement in definition of inspection/test criteria
  - Improvement in test/inspection capabilities
  - Engineering involvement in vendor audits/surveys

- Other initiatives

  - Safety classification program in place to develop detailed safety classification data
  - Continuous active involvement in NUMARC, EPRI activities (NCIG/PSE task groups, JUTG/TAG/NUPIC)
  - Region V engineering managers, procurement engineering group
  - Core integration Project/Procurement Engineering
  - INPO maintenance assist and TENERA evaluation conclude solid program in place
  - Site visits to other plants to compare process and products (completed and planned)

- Design Basis Documentation Program

  - Quality action team (QAT) revisited Design Requirements Document (DRD) program

    - Format, content and scope redefined
    - Responded to Licensing & Assurance concerns
    - Addressed user concerns
    - QAT to validate program changes

  - Production of documents per plan/schedule

    - Seven new and five reformatted documents scheduled this year
    - Three completed this FY, plus two reformatted

- Design bases omissions and data base discrepancies identified during review
  - Issues resolved upon discovery whenever possible
  - Prioritization and tracking process in place for items not resolved
- Program includes limited verification and validation
- Setpoint methodology/design bases evaluation underway
  - 60 of 69 harsh environment instrument calcs performed by contractor
  - 22 issued by Supply System; 22 ready for issuance
  - 75 total safety related calculations performed

- Also reconstituting safety related relief valve setpoints
- Problem Evaluation Requests (PER's) written to address issues

- Probability Risk Assessment

  - Plant specific information (component failure rates, procedures, system design, thermal-hydraulic analysis, etc.) used

  - Methodology and analyses well underway and on schedule

    - IPE performed by in-house staff
    - IPEP (Tenera and FAI) reviewed all work

  - Significant coordination with Maintenance's Reliability Centered Maintenance (RCM) program

    - IPE and RCM coordinated schedules
    - RCM program uses IPE fault trees

- Integrating IPE methodology into plant processes

  - SSFI's
  - Vendor contact program
  - Supporting analysis for 50.59 determinations and safety evaluations

- Planning for external events analysis with Supply System resources following completion of initial IPE

- Configuration Management Program Integration

  - QAT assigned to assess program refinements and integrate corporate efforts

  - Directive prepared on configuration management (CM)

    - Defines CM
    - Provides a model of the program
    - Provides rules
    - Provides selection criteria to govern program scope

  - Integrated database is conducive for inclusion of DRD/configuration management information

- Design Change Process
  - QAT assigned to create process efficiencies & improve quality of product
  - Tenera evaluation complete with recommendations under consideration

- Technical Specification Improvements
  - Assessment completed of existing surveillance procedures, issues being addressed
  - Technical staff leading QAT to address process enhancements
  - Participating in improved technical specification program
  - Improved engineering bases for established requirements
  - Formalized program for surveillance procedure development and new specification transition

- Backlog Reduction Program
  - Resources assigned
  - Prioritization methodology established (consistent with Region V guidelines)
  - Backlog characterization complete
    - No priority 1 or 2 items in backlog
    - Distribution of priorities appears reasonable
  - Open items/issues being resolved

- Operating Margin Improvements
  - Design changes seek to improve operating margins
  - Analyses use best estimate vice bounding assumptions/analytical techniques where appropriate
- Megawatt Improvement Program
  - Project resources applied
  - Heat rate improvement projects designed and being implemented
  - Power uprate analyses initiated

- Self-Assessment Initiatives

  - Duke engineering contracted to assess Engineering organization

    - Report in hand
    - Working on issues (recent Engineering reorganization, consulting engineers, span of control)

  - Major organization effectiveness evaluation commissioned to evaluate work processes within Supply System

    - Commenced in July, completed in December
    - Engineering a major focus
    - Performed by Tenera Corporation
    - Recommendations will be addressed by QAT's and management

- Directorate initiated functional realignment implemented

  - Balance workloads
  - Improved management involvement
  - Better alignment of resources to needs

- Five quality action teams focusing on improving the quality and efficiency of work processes

  - Design change process
  - Design requirements documentation
  - Configuration management program
  - Procurement specification process
  - Policy 22 procurement (chemical compatibility)

OVERVIEW OF PLANT PERFORMANCE

- Plant Managers Office-
  Jack Baker/Larry Harrold

  - Continued Conservative Decision Making
  - Improved Department Integration
  - Improved Effectiveness/Integration of External Organizations-Licensing and Assurance, Engineering, Support Services, Corporate and Training
  - Defined Expectations and Accountability-Performance Standards

  Failure to Provide Adequate Leadership at the Early Stages of Program Problems-EOPs, Requal Program, MOVs, Rad Waste Shipments

OVERVIEW OF PLANT PERFORMANCE (CONTINUED)

- Operations Department-
  Sam McKay/Bill Shaeffer
  - Continue Error Free Plant Operation
  - Procedure Upgrade Effort
  - Procedure/Program Adherence
  - Improved Shift Leadership
  - Effective Use of Station Resources
  - Quality Hot License Class

    Requal Program Failure

OVERVIEW OF PLANT PERFORMANCE (CONTINUED)

- Maintenance Department-
  Jerry Harmon/Don Feldman

  - Strengthen Management Team-Shop Supervisors/Program Leads
  - Improved Quality of Work Documents
  - Improved Material Condition of the Plant
  - Improved Procedural Adherence
  - RCM Program on Schedule
  - Improved Quality/Quantity of Training
  - Automated Maintenance Management System

  Procedure Upgrade Effort
  Backlogs Remain Constant

OVERVIEW OF PLANT PERFORMANCE (CONTINUED)

- Technical Department-
  Rob Webring/Geof Gelhaus
  - Focussed on Operation/Maintenance Support
  - Strong Relationship with Engineering
  - Improved Plant Performance
  - Improved Fuel Reliability

    Workload of System Engineers

    Compliance/Corrective Action Backlog

OVERVIEW OF PLANT PERFORMANCE (CONTINUED)

- Health Physics/Chemistry-
  Bob Graybeal/Dave Pisarcik

  - Strengthen Organization

  - Improved Performance Indicators-Man-Rem Exposure, Contaminations, RORs, Chemistry Index, Rad Waste Volume

  - Improved Quality/Quantity of Training

  - ALARA Planning

    Rad Waste Shipping Violations

    Admin Over-exposure

OVERVIEW OF PLANT PERFORMANCE (CONTINUED)

- Planning and Scheduling-Bill Waddel
  - Improved Outage Planning/Execution
  - Continued Work Control Improvements
  - Focussed Station on Long Range Planning

    Increase Accuracy and Scope of Work Control
- Administrative Department-John Peters
  - Automated Procedures Project

CHRONOLOGY OF THE LAST SALP PERIOD 9/1/90 TO 12/31/91

9/1/90	BEGIN SALP PERIOD—PLANT AT FULL POWER
9/25/90	MANUAL SHUTDOWN DUE TO BROKEN DEH PIPE NIPPLE
9/30/90	RETURNED TO SERVICE
9/90	RECEIVED RESULTS OF THE GE SODIUM INJECTION CALIBRATION OF OUR FEEDWATER FLOW-EXISTING CALIBRATION CONFIRMED
10/24/90	UNUSUAL EVENT DUE TO CROSS CONNECT OF 24VDC QC1 AND QC2 POWER SUPPLIES
10/30/90	UNUSUAL EVENT DIESEL FUEL NOT BEING TESTED IN ACCORDANCE WITH TECH SPECS-NRC WAIVER GRANTED
11/2/90	MANUAL SHUTDOWN/UNUSUAL EVENT DUE TO CRACK IN HPCS DRAIN LINE. 104 WELDS IN 40 SIMILAR DRAIN INSPECTED AND FOUND ACCEPTABLE.
11/11/90	PLANT RETURNED TO SERVICE
12/7/90	AUTOMATIC REACTOR SHUTDOWN DUE TO FLASHOVER ON THE "B" PHASE STEP-UP TRANSFORMER. ALL INSULATORS CLEANED AND LOWERED CIRC WATER CYCLES OF CONCENTRATION

12/10/90	PLANT RETURNED TO SERVICE
1/91	NEW MONTHLY GENERATION RECORD FOR WNP-2 OF 825,840 MWHe GROSS, 797,521 MWHe NET AND A MONTHLY CAPACITY FACTOR OF 97.9%.
3/21/91	REACTOR POWER REDUCED TO 15% AND THE GENERATOR WAS TAKEN OFF LINE TO CLEAN THE 500KV INSULATORS. THE GENERATOR WAS PUT BACK ON LINE THE NEXT DAY.
3/28/91	BEGIN END OF CYCLE POWER COASTDOWN
4/3/91	PLANT ENTERED FINAL FEEDWATER TEMPERATURE REDUCTION (FFTR) MODE OF OPERATION
4/12/91	OIL SAMPLES ON DG-1 REVEALED UNACCEPTABLE WEAR PARTICLES. DECLARED DG-1 INOPERABLE.
4/13/91	PLANT MANUALLY SHUTDOWN TO BEGIN THE R6 REFUELING OUTAGE FOLLOWING 124 DAYS OF CONTINUOUS REACTOR OPERATION.
4/17/91	DG-1 GENERATOR REMOVED AND SHIPPED TO THE GE REPAIR SHOP IN OAKLAND. RETURNED TO THE SITE ON 5/3
9/26/91	COMMENCED REACTOR STARTUP AND LOW POWER/POST OUTAGE TESTING.

9/91	BEGAN CHEMICAL TREATMENT OF THE EMERGENCY SERVICE WATER SPRAY PONDS
10/1/91	PLANT MANUALLY SHUTDOWN TO CORRECT AN OIL LEAK ON A TURBINE REHEAT STOP VALVE.
10/4/91	PLANT RETURNED TO SERVICE
10/25/91	PLANT DOWN POWERED TO 10% FOR A DRYWELL LEAKAGE INSPECTION. LEAKAGE CORRECTED
11/1/91	MANUAL SHUTDOWN OF THE REACTOR TO DO A CONDENSER TUBE LEAK.
11/4/91	REACTOR AT 1000 PSIG/DRYWELL INSPECTION-DECLARED UNUSUAL EVENT DUE TO A PINHOLE LEAK IN THE WELD FOR THE SHUTDOWN COOLING DRAIN VALVE.
11/7/91	PLANT RETURNED TO SERVICE.
11/14/91	ESTABLISHED 24 HOUR GENERATION RECORD OF 27,420 MWHe GROSS
11/19/91	AUTOMATIC REACTOR SCRAM/UNUSUAL EVENT DUE TO LOSS OF FEEDWATER/LEVEL 2 ISOLATION.
11/22/91	PLANT RETURNED TO SERVICE.
12/31/91	END OF THE SALP PERIOD

MANAGEMENT LESSONS LEARNED

- New Management Expectations
  - Command/control
  - Communication
  - Training program execution
- Improved Evaluations Techniques
  - Contract support provided
  - Defined evaluator expectations
  - Formalized performance tracking
  - Improved evaluation consistency

- Improved Scenario Quality/Content
  - Significant industry input
  - Utilizing NUMARC guidance
  - Significant regional input
  - Improved scope, complexity, ISCT, number
- Program Maturity/Operator Performance
  - Operator confidence is improved
  - Crew consistency is excellent
  - Casualty response noted

OPERATIONAL PROGRAMS

- PPM Development
  - Biennial V&V 111/416 PPM
  - Process fully implemented
  - New software
  - Prioritized process
  - Staff funded through FY93
  - 50.59 Implemented
  - Performance and buy-in improved

- EOP Upgrade
  - Phase 1 complete
  - Phase 2 on-going
    - Writers guide and V&V revision
    - PSTG review
    - User's guide update
    - Revised EOP/ESP
    - Maintenance program
    - Training document
  - Phase 2 benefit
    - Greater understanding
    - Resolutions of PSTG issues
    - Better human engineering

- Establish Goals
  - Staffing
  - Regulatory performance
  - Safely maximize output
  - Administrative performance
  - PPM development
  - Training compliance
  - Work control

- Implemented Third SER
  - Utilized INPO criteria
  - Provided operation evaluation of alignment
  - Established compliance via program execution
- Implement Ops Watch
  - Self-evaluation of administration
  - Seven processes involved
  - Grass-root effort of self-identification and resolution

OPERATIONAL PERFORMANCE

- Error-Free Maneuvering
  - Five unusual events executed
  - Many vacuum related load reductions
  - Eight reactor shutdowns
  - Two major downpowers
  - Numerous equipment related maneuvers
  - Loss of feedwater event

- Milestone Achievements
  - Highest gross monthly production 825,840 MWE
  - Highest monthly capacity 97.89%
  - Achieved coastdown
- Areas of Concern
  - Procedural adherence
  - PPM technical quality
  - Goal understanding/achievement
  - Isolation/maturity

FUTURE CHALLENGES

- Program Maintenance
  - Ops watch
  - Goal adherence
  - PPM development
  - Requalification process
- Departmental Maturity
  - Continue growth realized during remedial process
  - Develop shift supervisor program
  - Stabilize requalification program
  - Understand industry

- Create Growth
  - Provide transdepartmental opportunity
  - Refine candidate expectations
  - Continue funding personnel throughput

PRESENTATION TO NRC
DECEMBER 20, 1991

- Introduction

- Improvement Initiatives during this SALP period

  - RCM (Predictive/Condition Monitoring)
  - Work Planning
  - Work Control
  - Maintenance Training
  - Procedures Upgrade

RELIABILITY CENTERED MAINTENANCE (RCM) PREDICTIVE/CONDITION MONITORING

GOALS:

A. Addition of applicable and effective critical component PM tasks.

B. Upgrading the present PM program through the use of the RCM process to eliminate inapplicable or ineffective Preventive Maintenance.

C. Create a documented basis for the PM program.

    1. RCM looked specifically at what systems and key components are essential in keeping WNP-2 safe and reliable.

RELIABILITY CENTERED MAINTENANCE PREDICTIVE/CONDITION MONITORING (Continued)

WNP-2 picked the top 50 systems to be analyzed with the RCM process (an abbreviated study will be done on the remainder of plant systems).

2. Develop condition monitoring programs to track equipment performance and compare that performance with established standards.

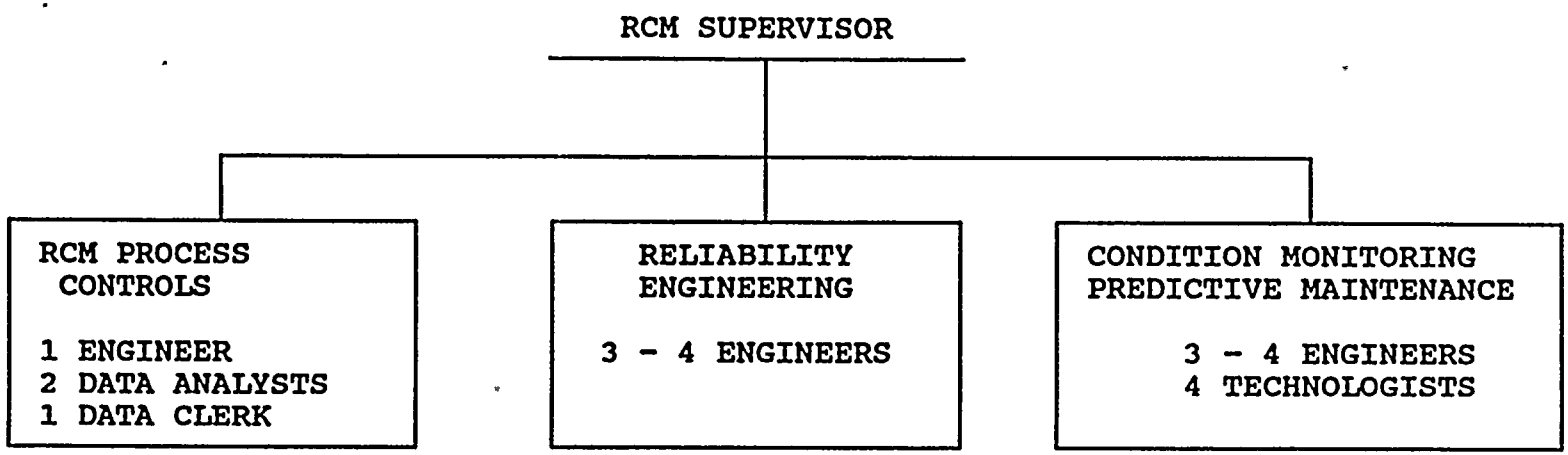
3. Developed a detailed task analysis/assessment for staffing and implementing the living RCM program based partly on contractor's recommendations.

RELIABILITY CENTERED MAINTENANCE PREDICTIVE/CONDITION MONITORING (Continued)

4. Writing preventive maintenance instructions for all PM tasks in the program.

RELIABILITY CENTERED MAINTENANCE STATUS REPORT - 10/23/91

PRELIMINARY RCM ORGANIZATIONS BY FUNCTIONS



PROCESS MANAGEMENT
DATA ANALYSIS
TRENDING
INFORMATION MANAGEMENT
INFORMATION QC

RELIABILITY ANALYSIS
MECHANICAL ENGINEERING
ELECTRICAL ENGINEERING
LAN SUPERVISION
SOFTWARE MANAGEMENT
FMEA'S, RBD'S
ROOT CAUSE ANALYSIS

VIBRATION ANALYSIS
MODAL ANALYSIS
OIL ANALYSIS
MOTOR CURRENT SIGNATURE
THERMOGRAPHY
EQUIPMENT DIAGNOSTICS

WORK PLANNING

GOALS:

A. Improve the level of detail, technical direction in the work instructions

B. Reduce rework and improve execution of plant work

   1. Changed our Maintenance Work Request procedure, PPM 1.3.7

   2. Trained both the Craft and Maintenance/Technical Engineers to the new PPM

   3. Instituted a computer-based program for work instruction preparation

   4. Increased our field supervision to monitor performance

WORK CONTROL

GOALS:

A. Improve scheduling and work coordination

B. Reduce maintenance challenges to operations

C. Improve productivity through proper scheduling

1. Established a Work Control group comprised of people from all groups
2. Established a short range (3 day) planning and execution plan
3. Establishing a 12 week look ahead schedule
4. Establishing a LCO maintenance procedure
5. Implemented a monitoring and feedback report

MAINTENANCE TRAINING

GOAL:

A. Implement a systematic approach to training to support the safe operation of WNP-2

1. Completed a job task analysis of all the Maintenance disciplines

2. Established a three phase approach to support work done in plant

3. Develop instructional material to support training

4. Observation and monitoring of the skills of the craft in the field and classroom

PROCEDURES UPGRADE

GOALS:

A. Revise existing Plant Maintenance procedures to better describe work processes in more detail including specific tooling and test equipment, working condition limitations and requirements, setpoints and tolerances, and craft direction in performing critical steps

B. Develop new procedures to support critical repair work

   1. Formed procedures group in the Maintenance Department consisting of a staff of 12 full time writers

   2. Implemented standards for plant procedures format, level of detail, content via an approved procedures writer's guides

PROCEDURES UPGRADE
(Continued)

3. Implemented both standards and processes for measuring the technical accuracy and useability of plant procedures via procedure "Verification and Validation"

4. Set a schedule for development of new procedures to support plant needs

CY91 PERSONNEL ADDITIONS

- NEW FULL TIME RCM SUPERVISOR
- NEW FULL TIME PROCEDURE SUPERVISOR
- 3 NEW RCM ENGINEERS
- 2 NEW DECON LABORERS
- 5 NEW MECHANICAL ENGINEERS
- 3 NEW MECHANICAL CRAFT SUPERVISORS
- 2 NEW ELECTRICAL ENGINEERS
- 1 NEW ELECTRICAL CRAFT SUPERVISOR

CY91 PERSONNEL ADDITIONS
(Continued)

- 1 NEW I&C CRAFT SUPERVISOR
- 1 NEW I&C ENGINEER
- 1 NEW I&C TECH

TECHNICAL SUPPORT

STRENGTHS AND SUCCESSES

- **Experienced staff (*the WNP-2 Tech Staff turnover rate has averaged only about 5% over the past 3 years, average system engineer nuclear work experience is 16 years, many were here during plant startup; STAs average 18 years nuclear experience with several holding advanced engineering degrees; recent additions to the staff recruited from other nuclear utilities)***

- **Ability to respond to diverse problems for resolution**

STRENGTHS AND SUCCESSES
(Continued)

- Achieved new standards for plant performance
  - drywell leakage reduced to near zero levels
  - condenser inleakage at record low levels
  - plant heat rate records being set

- Real success in resolving long standing problems

  - control room recorder replacement program
  - reduced valve leakage in BOP
  - supervisory system improvements
  - turbine rotor replacement in R-7 outage

- Good attitude toward new direction of Technical Staff

SALP INITIATIVES

- **System Engineering Program**

  Goal: Achieve a proactive approach to system problem identification and resolution

  - **System engineers have demonstrated capabilities to resolve complex system and component problems (*RRC pump repairs, RWCU pump replacement, MSIV design resolution, troubleshooting RRC pump seal concerns, development of CRD system long term maintenance strategy)***

SALP INITIATIVES

- **System Engineering Program** ***(Continued)***

  - **Need to develop progressive approach to problem identification/ resolution in its entirety** ***(turn attention from major problem resolution to trending/monitoring system health on a routine basis to preclude or limit failures)***

  - **Established management expectations and priority for the position (*WNP-2 instituted a formal program for system engineering in November of '91, full implementation in January of '92)***

- **System Engineering Program** *(Continued)*

  - **Established responsibilities and requirements for the position** (*management expectations were provided to the staff to include position requirements and qualifications*)

  - **Provided detailed walkdown checklists for weekly, monthly, quarterly and annual system walkdowns** (*includes specific requirements for system field walkdowns, operations and maintenance feedback, joint annual walkdowns with design engineering, periodic review of system procedures, LBDs, system operating and maintenance trends, etc.*)

  - **Based on INPO guidelines and review of other utility programs**

SALP INITIATIVES

- **Status**
  - **Implemented Pilot program 12/01/91, all systems in 1/92 (*the Pilot program included at least one system for each system engineer for performance of walkdowns and review)***
  - **Includes management feedback for monitoring program implementation and results (*utilizes the existing plant tracking system to identify overdue monthly, quarterly, and annual walkdowns; also, the results of each walkdown are reviewed by the individual discipline supervisor prior to closure)***

SALP INITIATIVES

- Status *(Continued)*
  - Initial results, examples:
    - valve packing leaks/valve handwheels missing
    - the inverter for plant computers was found improperly aligned
    - missing and damaged insulation
    - general housekeeping concerns
    - worn belts on a blower
    - overload heater leads damaged

SYSTEM ENGINEER WORKLOAD

Goal: Minimize competition for system engineering resources outside system and related responsibilities

- Actions Taken
  - Thirty-four system engineers currently assigned to 89 systems
  - Established a separate project engineering function within Technical Staff with 5 new permanent headcount
  - Added support to Technical through resource sharing with Engineering MOV program, RRC Loop decontamination
  - Transferred the responsibility for performance of the minor mod design function to Engineering

SYSTEM ENGINEER WORKLOAD

- Actions Taken *(Continued)*

  - System engineer's support - contract personnel utilized in support mode only
  - Added clerical support through the addition of 7 new staff members
  - Transferred the primary responsibility for formal root cause investigations to the Licensing and Assurance directorate
  - Benefitting from the increased strength in the Maintenance Engineering staff to relieve the burden of more routine activities

MOV PROGRAM, IR 91-16

- **Summary of Actions to Date**

  - **Initiated differential pressure testing in R-6 extension to include 22 valves** ***(results of the testing are positive; all valves performed their function under differential pressure conditions and those which allowed comparison of actual differential pressure field measurement demonstrated acceptable margin; additional testing and analysis is required to develop additional confidence in the methods currently in use; data gathered during the upcoming refueling outage will set the standard for future testing and more set-up requirements)***

MOV PROGRAM, IR 91-16

- **Summary of Actions to Date (*Continued)***

  - **Established a position of Program Manager and increased staffing internal to the Supply System (*dedicated staffing in the program was increased in Engineering, Maintenance and Technical; additional consultant and contractor support will be utilized)***

  - **Made budgetary adjustments to support increased program emphasis**

  - **Active participation in the Region V MOV User's Group (*WNP-2 hosted the most recent meeting of this group; comparisons of status of the Region Utilities' progress to date shows areas for further growth for WNP-2)***

MOV PROGRAM, IR 91-16

- **Summary of Actions to Date *(Continued)***

  - **Continued participation in MOV User's Group and BWR Owner's Group on MOVs**

  - **Addressing audit findings and concerns in program review (*additional responses to the 89-10 WNP-2 audit have been provided with a need to maintain an open dialogue on the subject)***

  - **Actively participating with test equipment vendors to address test equipment inaccuracies**

MOV PROGRAM, IR 91-16

- **Planned and Ongoing Activities**

  - **Contracting for consultant services to review/revise MOV program plan and design basis review standard (*changes to the plan will be made in support of the upcoming R-7 outage*)**

  - **Contracting for consultant to review and revise the WNP-2 MOV size and switch setting standard**

  - **Will review MOVs to be worked in the upcoming outage (R-7) to the new standards**

MOV PROGRAM, IR 91-16

- **Planned and Ongoing Activities *(Continued)***
  - **R-7 Planned Activities**
    - **diagnostic testing of 50 MOVs (*17 initial baseline tests)***
    - **differential pressure testing of 39 MOVs**
    - **post R-7 work remaining: 35/163 diagnostic tests and 39/~100 differential pressure tests**
  - **Purchased software for MOV trending**
  - **R-7 diagnostic testing to include TMD and direct valve stem thrust measurement testing techniques**

SECURITY SALP UPDATE

- Finish Security Program enhancements
  - New AAP complete and operational
  - Second fence complete
  - New x-ray, metal detectors
  - Perimeter surveillance upgrades
- RER findings
  - Denial team response plan
  - Special training
  - Equipment pre-positioned in plant
  - Upgraded side arms
- Vital area door closure problems
- On-site communication
- Enhance communication between officers and first line/mid-level management

SECURITY PROGRAM PERFORMANCE

	1990	1991
Cited Violations	1	0
Non-Cited Violations	6	0
NRC Open Items	14	3
QA Open Items	3	0
Loggable Events	878	320[1]

[1] Through Third Quarter

SECURITY CHALLENGE

- Continue To Improve
  - Communication
  - Training
  - Staff Development
  - Stay in alignment with national trends and standards

EMERGENCY PREPAREDNESS
SALP UPDATE

- Increased management aggressiveness to resolve deficiencies and weak areas

  - Formation of state, county and Supply System working group
  - Involvement with Washington State to improve injestion pathway protective measure capability
  - Frequent meetings with state and local agency management
  - Quality Action Team to improve Operations Support Center
  - Corrective Action Review Committee

- Resolve differences between Emergency Plan & Emergency Preparedness Implementing Procedures

- Management should foster a more conservative approach to event classification

EMERGENCY PREPAREDNESS
1991 PERFORMANCE

	DEF	ARCA	ITEMS	WEAKNESS
START OF YEAR	5	58	3	
STATE REMEDIAL EXER.	(3)	(6),4		
MED. EXERCISE	(1)	(3)		
TROJAN EXERCISE	(1)	(12)		
JOINT WORKING GROUP		(31)*		
WNP-2 EXERCISE			(3),1	1
YEAR END TOTALS:	0	41	1	1

*Submitted to FEMA

EMERGENCY PLANNING CHALLENGE

- Continue to improve regional emergency preparedness
- Reach a lasting agreement with the State of Oregon
- Establish Supply System "emergency center teams"
- Stay in alignment with national trends and standards

FITNESS FOR DUTY

- 1991's EXPERIENCE
  - Continued Acceptance by Employees
  - No "Significant FFD Events" Reported
- ADVISORY COMMITTEE
- CRITICAL SELF-ASSESSMENTS
- ON-SITE PRE-SCREENING
  - State Medical Test Site License
  - Capacity - 150 Five Drug Screens/Day
  - Dedicated Resources
- CONTRACT SERVICES
  - EAP
  - Two HHS-Certified Confirmation Labs
  - Specimen Collection

SECURITY PROGRAMS ITEMS ADDRESSED BY NRC IN 1990 SALP REPORT

1. **WEAKNESS • . . . Management should also continue to support Security Programs' enhancements, e.g., ensure that the Support Facility construction schedule pertaining to security items continues to be met and the replacement for worn or less reliable equipment are procured as soon as possible . . . :**

   - Construction of the new AAP was completed and operational on September 3, 1991.
   - Installation of the second fence and the enhancement of the protected area fence in selected areas is complete.
   - New state-of-the-art ***X-RAY MACHINES***, ***HAND-HELD METAL DETECTORS***, and ***WALK-THROUGH METAL DETECTORS*** have been purchased and are in use.
   - With the exception of one microwave unit which does not require modification and one microwave unit which was triple stacked, all perimeter microwave units have been converted to dual stacked units.
   - All fixed tube-type CCTV cameras have been replaced with solid-state cameras.
   - Capability to retrieve historical data for False, Nuisance, Valid, and Security generated alarms has been completed.

2. **WEAKNESS • . . . RER findings related to security deployment and inadequate response time to vital areas in the power block . . . :**

   - The development of a comprehensive Denial Team Response Plan has been completed and implemented.
   - Four security sergeants attended a two-week tactical response course at the Institute of Public Service in Gainsville, Ga. and a two-day tactical training seminar sponsored by the Washington State TAC Officers Association.
   - All Security Force supervisors have received advanced response team training consisting of tactical weapons firing, use of response equipment, and denial plan briefing. Squad training is now occurring.
   - Response equipment cabinets have been positioned in the plant power block and other selected PA locations.
   - ***THREE BALLISTIC ARMORED SHIELDS*** and ***THREE INDIVIDUAL BODY SHIELDS*** have been obtained for use, as needed.
   - New Glock and Carbine replacements (revolvers and shotguns) are now in use by Security Force members.

SECURITY PROGRAMS ITEMS ADDRESSED BY NRC IN 1990 SALP REPORT (cont'd)

3. **WEAKNESS • Vital Area Door Closure Problems . . . :**

   - New heavy-duty, spring-loaded door hinges have been installed on some problems doors.
   - Strobe lights were installed in January 1991, on other problem doors. (Since then, 3 unsecured door incidents have occurred compared to 23 incidents in 1990.)

4. **WEAKNESS • Communications between security officers and first line/mid-level management should be enhanced to ensure that weaknesses identified by security officers are properly addressed . . . :**

   - The Quality Advantage (TQA), a program designed to encourage individual and team participation in the decision-making process at all levels, was provided to all employees. All Security Programs' personnel have attended TQA training seminars, and supervisors and managers have attended additional training in Quality Management Skills.
   - To further enhance security officer involvement, the Security Force has representatives on 25 separate task committees, working groups, and/or Quality Action Teams. All designed to utilize Security Force personnel in the problem-solving process.

5. **WEAKNESS • Long-standing concern relative to on-site communication . . . :**

   - New, hand-held, portable radios have been purchased and are in use.
   - Installed 750 feet of antenna cabling in plant power block and eliminated poor radio communication.

STATISTICAL DATA

Since the 1990 SALP rating period ended, the following Region V Safeguards Licensing Visits/Routine Inspections and Corporate Licensing and Assurance Audits have occurred:

*	NRC 91-05	02/11 through 03/13, 1991
*	NRC 91-13	05/13 through 05/29, 1991
*	NRC 91-38	11/04 through 11/29, 1991
*	QA Audit 91-550	03/18 through 03/28, 1991
*	QA Audit 91-583	10/07 through 10/18, 1991

TABULATION OF SECURITY EVENTS AND AUDIT FINDINGS

1. Number of Cited Violations:
   - 1990 SALP Rating Period 1
   - Current Rating Period 0
2. Number of Non-Cited Violations:
   - 1990 SALP Rating Period 6
   - Current Rating Period 0
3. Number of Open NRC Items:
   - 1990 SALP Rating Period 14
   - Current Rating Period 3
4. Number of Open QA Audit Items:
   - 1990 SALP Rating Period 3
   - Current Rating Period 0
5. Equipment Reliability/Compensatory Posting:
   - FY90 Loggable Events 878
   - FY91 Loggable Events (Through 3rd Quarter) 320

EMPHASIS FOR 1992

- To enhance vital area door protection and operation, magnetic door locks will be installed to replace existing dead-bolt locks on selected doors. Installation of magnetic door locks is scheduled to be completed January 1992.

- Security Programs is committed to achieving and maintaining the best communication possible throughout the supervisor/officer chain of command as well as lateral within the department. Efforts for the coming year will be:

  1. Ensure open communication is maintained.

  2. Improve participative management processes.

  3. Improve and give feedback and foster a caring attitude.

  4. Create an atmosphere where people will feel a part of the team and be willing to get involved.

- Continue orientational rotation of Security Force supervisor personnel through Security Programs, Safeguards, Investigations, and Security Training. This departmental interface provides a better understanding of how each section operates and supports each other in accomplishing departmental goals.

- Continue to train Security Force members in the Denial Plan implementation to successfully protect WNP-2 from radiological sabotage. This includes a combined Security Training - Security Force effort to develop an approach to encourage and process feedback from all participants.

- Continue the process of exchanging Security Force supervisors with other Region V licensees during our annual QA security inspection.

- Continue involving our security trainers in training exercises conducted by local and state SWAT teams.

- Participate in force-on-force exercises conducted by Region V licensees as observers/evaluators.

- Continue our efforts to streamline the background screening program to maintain pace with processing enhancements created by changes in federal law, Supply System disciplines, contractors, and vendors with the intent of expediting personnel processing to keep pace with outage requirements.

EMERGENCY PREPAREDNESS ITEMS ADDRESSED BY NRC IN 1990 SALP REPORT

1. **Increased management aggressiveness and oversight are encouraged regarding the resolution of deficiencies and weak areas in the emergency preparedness program.**

   - Supply System management initiated formation of a working group of state and county agencies under the leadership of the State Division of Emergency Management. The group has worked together to design response actions for outstanding deficiencies and other Areas Requiring Corrective Action (ARCAs).

   - The Supply System committed staff time and management involvement in support of Washington States development of ingestion pathway protective measures capabilities and demonstration of capabilities in the Trojan emergency exercise.

   - Supply System emergency management is meeting at frequent intervals with management of state and local agencies to identify and address issues in a timely manner.

   - As a result of these and other actions, all FEMA deficiencies have been closed and FEMA ARCAs are being actively addressed by the appropriate agencies in a coordinated manner.

   - The WNP-2 Plant Manager's office has initiated a Quality Action Team to address Operations Support Center performance. The team which consists of management and staff of the OSC is expected to provide comprehensive improvement recommendations in four to six months.

   - Increased management attention has been directed at the corrective action process. A Corrective Action Review Committee has been established within the emergency planning organization for initial evaluation of issues. Selected issues are elevated to the WNP-2 Management Review Committee via the PER (Problem Evaluation Request) process when appropriate.

2. **Management should expedite resolution of discrepancies between the Emergency Plan and procedures.**

- An outside consultant was engaged to perform a detailed comparison between the Emergency Plan and the Emergency Plan Implementing Procedures (EPIP). The results of his study have been incorporated into the EPIPs and into the Plan which is currently in the hands of the NRC for approval prior to implementation.

3. **Management should foster a more conservative approach to event classification.**

- The EPIP entitled "Classifying the Emergency" underwent substantial revision. The revision was subsequently reviewed by the NRC (Inspection Report No. 50-397/91-17). The revised EPIP was included in extensive operator requalification training on control room emergency operating procedures. Conservative application of the emergency classifications was demonstrated in two subsequent events.

EMERGENCY PREPAREDNESS
EMPHASIS FOR THE CALENDAR YEAR 1992

- Continue to work with Washington State agencies and surrounding counties on maintenance and improvement of emergency preparedness capabilities. Demonstrate those capabilities in annual drills and exercises such that public and regulatory confidence in our emergency management capability is sustained.

- Achieve a lasting agreement with the State of Oregon on the appropriate level of participation in WNP-2 emergency planning.

- Improve our working relationship with representatives of the Federal Emergency Management Agency.

- Work to establish "emergency center teams" to take ownership in the procedures, training, equipment, and performance of their centers.

- Maintain an awareness of national trends and events to ensure industry alignment in emergency preparedness matters.

- Promote prompt remedial action and thorough permanent corrective actions to identified deficiencies.

MANAGEMENT EFFECTIVENESS ASSESSMENT

- Purpose
  - Validates the effectiveness of attaining the corporate mission and vision
  - Provides Senior Management with an evaluation of whether key functional initiatives are achieving their intended objectives
- Represents a lessons learned to our previous effectiveness assessment program. New concept approved by Quality Council.
- Initial Phase
  - Evaluation of goals and targets - established for management performance upgrades

MANAGEMENT EFFECTIVENESS ASSESSMENT (CONTD.)

- Determine if goals are in harmony with overall Supply System Plan

- Second Phase

  - Assess key functional initiatives for results achieved in meeting overall strategic plan

  - This phase will be repeated on a rolling 24 month schedule

- L&A will be Overall Coordinator Using a Team Approach (5-6 Staff) Representing:

  - L & A Senior Staff
  - Evaluated organization
  - Outside industry experts
  - INPO and/or utility assistance

MANAGEMENT EFFECTIVENESS ASSESSMENT (CONTD.)

- Assessment proposed scope will be pre-approved by Quality Council. Scope will include industry benchmarking. Will not duplicate TENERA Study.

- Assessment results are reported to management of area evaluated. Summary presentation to Quality Council.

- Assessment Areas:

  - Regulatory Performance
    - Maintenance (Pilot)
    - Operations
    - Engineering
    - Support Programs

  - Cost of power
    - Outage length reduction
    - Plant reliability performance

MANAGEMENT EFFECTIVENESS ASSESSMENT (CONTD.)

- Improved organizational performance
  - Work process improvement
  - Quality improvement/performance measurement/accountability/ communications

STRUCTURED TRENDING

- Initiated By L & A -- Reviewed and Approved by Quality Council
- Provides a Tool for Measuring Quality Performance
  - Meaningful measurements are selected
  - Uses statistical measurement tools which can be used to measure performance
  - Provides the tool to measure effectiveness of structure tree/TENERA process improvements
- Will Involve Training by L & A on Use of Tool and to Help Select Appropriate Performance Measurements

STRUCTURED TRENDING (CONTD.)

- Several Organizations Interested in Concept. One or Two will be Selected as "Pilots". These May Include:
  - Nuclear Licensed Training
  - Engineering Administration

SAFETY ASSESSMENT/QUALITY VERIFICATION AGENDA

- Issues From Last Salp Report
- Other Management Initiatives
- Future Direction

ISSUES FROM LAST SALP REPORT

- Need to Maintain an Aggressive Attitude and Sustain Momentum
- Improve Root Cause Program

NEED TO MAINTAIN AN AGGRESSIVE ATTITUDE AND SUSTAIN MOMENTUM

- Dedicated/Competent Staff
- Improved Technical Quality of Products
- Increased Credibility with Plant Staff
- High Standards (Excellent Performance not Minimum Compliance)
- Pro-active in Supporting Supply System's Total Quality Program

QUALITY/VERIFICATION ACTIVITIES (FY90/FY91)

	Number	Number of QFRs
Audits	13/16	115/88
WNP-2 Surveillances	87/80	111/115
Technical Assessments	13/8	26/104
OER (Industry Event Evaluations)	330/422	61*/57*
Root Cause Analysis (WNP-2 Events)	43/81	369*/457*

QUALITY/VERIFICATION ACTIVITIES (FY90/FY91) (CONTD.)

	Number	Number of QFRs
Vendor Audits/ Surveys/ Surveillances	26-18-61/ 32-24-60	23-2-na/ 30-4-na
QC Work Package Reviews	6115/5820	na/na
QC Inspections	1333/1384	na/na
Receipt Inspections	8800/8503	na/na

* PTL Action Items

ROOT CAUSE PROGRAM

- Centralized Root Cause Analysis Performance in One Department
- Upgraded Staff Qualifications and Training
- Technical Quality of RCA Products Improved
- Dedicated Resource (Event Corrective Action) Established Within L & A to Facilitate Corrective Action Closure
- ECA Supports Plant Management in Weekly Program Status Tracking and Expediting Action Closure
- Plant Problem Process Upgraded
  - Revised procedures to streamline approval and administrative process

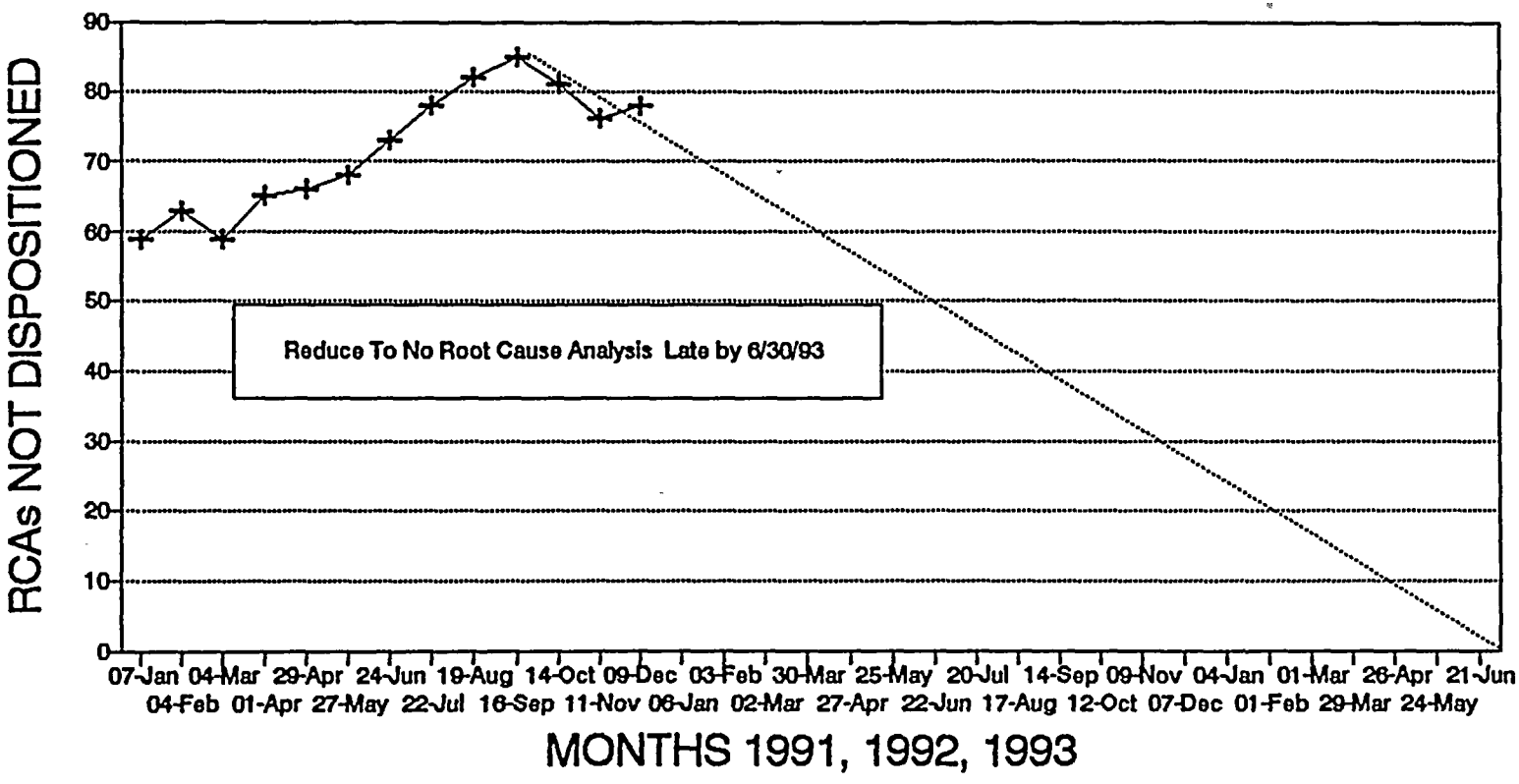
ROOT CAUSE PROGRAM (CONTD.)

- Corrective action approval secured by RCA engineers prior to independent plant review and approval

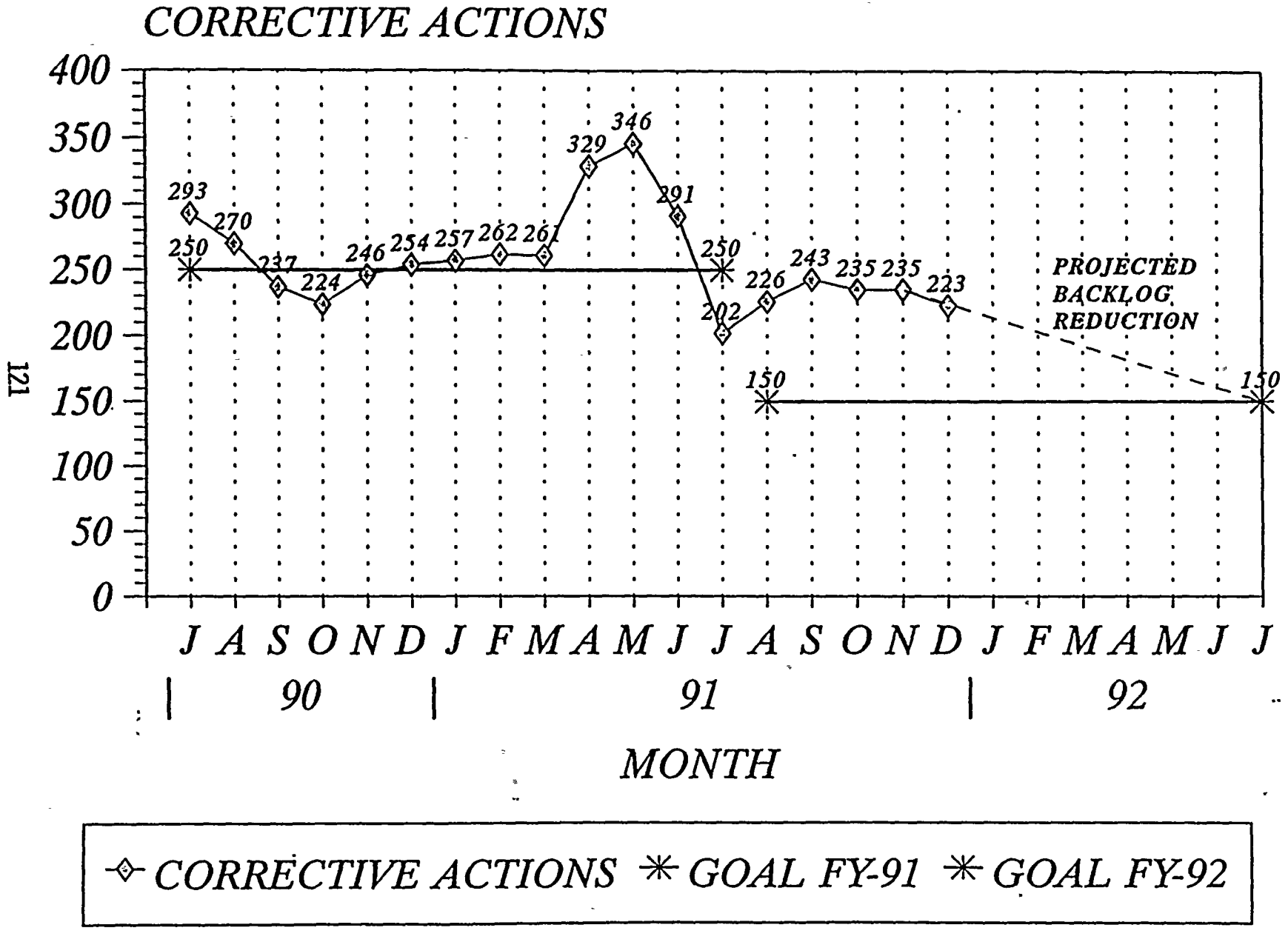
- QA verification limited to NCR corrective actions. ECA verifies closure of other root cause corrective actions

BACKLOG OF LATE RCAs

NCR > 30 DAYS, PDR/MDR > 60 DAYS



OPEN CORRECTIVE ACTIONS
(NCRA's, MDRA's, PDRA's)



OTHER MANAGEMENT INITIATIVES

- 50.59 Safety Evaluation Process Upgrade
- L & A Annual Report (Annual & Semi-annual)
- FSAR Search/Commitment Tracking
- Team Inspections (SSFI, OMI, etc.)
- Total Quality (Quality Action Team) Involvement
- Pro-active in Staff Rotations/Training
- Benchmarking with Nuclear Industry
- Integrated Planning
- Customer/Supplier Agreements
- Cooperative Problem Solving

50.59 SAFETY EVALUATION PROCESS UPGRADES

- Pro-Active in Promoting Upgrades
- Plant and Engineering Procedures Upgraded
- New Procedures Contain NSAC-125 Guidelines
- Additional Training Implemented
  - 2 1/2 day training for > 250 staff on 50.59 requirements and new procedures
  - 9 day nuclear safety design basis training for ~ 50 technical staff (qualified reviewers)

50.59 SAFETY EVALUATION PROCESS UPGRADES (CONTD.)

- New 50.59 Committee Chartered by Senior Management
  - Revised plant and engineering procedures have been drafted
  - Nuclear operating standard near completion
  - Additional training to be provided on new procedures
  - Other upgrades planned
- Qualified L & A Staff Reviewing all 50.59 Safety Evaluations Approved by POC
- Maintaining Awareness of Industry Direction

SIGNIFICANT ISSUES IDENTIFIED IN L&A ANNUAL REPORT

- Corrective Action Effectiveness and Timeliness
- Plant Chemistry Performance
- Radiological Waste Management
- Keeping Pace with Industry
- Outage Nuclear Safety
- Work Planning
- Operator Training and EOP Adequacy

FUTURE DIRECTION

- Improve Effectiveness of Current Programs
- Support Corporate Structure Tree
- Development of Prioritized L & A Structure Tree
- Increased Benchmarking
- Shutdown Risk Assessment
- Mov Assessment
- Management Effectiveness Assessment
- Radiological Program Assessment
- Focus on Timely and Effective Corrective Actions
- Integrated Database
- Training and EOP Adequacy

STRUCTURE TREES
(3-5 YEAR VISION)

- Improving Safety/Quality Verification Activities
- Improving Customer Relations
- Maintaining Awareness of Industry Status
- Regulatory Initiatives
- Improving Vendor Quality

BENCHMARKING

- Identify top performing utilities, visit utilities, and obtain sample products of high quality.

  - Recent visits include Callaway, Three Mile Island 1, San Onofre and Diablo Canyon.
  - Other visits will be initiated in early CY-92. Potential candidates include Fermi-2, and others.

- Attend industry conferences, seminars, external training, etc. of potential value to our programs. Some recent contacts have included:

  - NUMARC and regional operator requalification conferences
  - LIS/Trends Fall Conference
  - Advanced Root Cause Training
  - ORSERG

BENCHMARKING (CONTD.)

- INPO Chemistry Managers Workshop
- ASME Section XI Membership

- Incorporate effective processes into our safety/quality verification programs and implement.

- Continue involvement in Western Region Joint Quality Assurance Group (JUMA)

SHUTDOWN RISK ASSESSMENT

- Team Assessment
  - Technical Assessment (Lead), Operations, Planning & Scheduling, Plant Technical, Licensing and Safety Analysis
- Assessment using NUMARC 91-06, "Guidelines for Industry Actions to Assess Shutdown Management"
  - Outage planning and control guidelines
  - Applicable shutdown safety issues
- Recently Completed Organizational Efficiency Study by TENERA Addressed Outage Management

SHUTDOWN RISK ASSESSMENT (CONTD.)

- Using Information from Other Utilities
  - Pennsylvania Power & Light (Susquehanna)
  - Detroit Edison (Fermi)
  - Gulf States Utility (River Bend)
  - Southern California Edison (San Onofre)
- INPO & EPRI Guidelines Being Utilized
- Initial Assessment Including Review of R-7 Schedule Complete Early February 1992

SHUTDOWN RISK ASSESSMENT (CONTD.)

- Improvements Adopted from Assessment Implemented Prior to R-8
  - Some recommendations expected to be implemented prior to R-7
    - Policy Revision
    - Procedure Changes
    - Contingency Plans

RADIATION PROTECTION OVERVIEW

- Eight Audits that Reviewed Some Aspect of Radiological Protection
  - HP computer software
  - Radiological occurrence reporting program
  - HP work control
  - Training and qualification of HP technicians
  - HP personnel work performance
  - RWPs
- Six Surveillances Directed Entirely at Radiological Protection Program and Performance
  - Radwaste minimization
  - Alara planning
  - Communications
  - Work control
  - Instrumentation calibration
  - Instrumentation performance review

RADIATION PROTECTION OVERVIEW (CONTD.)

- Contamination control
- Dose assessment
- RWPs

- Five Additional Surveillances that Identified HP Related Findings

- Above Resulted in Four Audit Findings and Eighteen Surveillance Findings

RADIOLOGICAL PROTECTION ASSESSMENT

- Assessment Being Planned for a Programmatic Review of Radiological Protection Program
- Scope Currently Being Developed
- Team Effort Consisting of 4-5 Staff Including a Utility Representative
- Assessment Currently Planned for January/February, 1992
- Report Issuance Expected in March, 1992

PLANT CHEMISTRY OVERSIGHT

- 1988 and 1989 INPO Findings
  - Analytical controls and management involvement
- Corporate Audit 89-498
  - Problems with Chemistry Procedures
- Technical Assessment 89-11
  - No cohesive Chemistry Program (Reinstated Chemistry Committee)
- Corporate Audit 90-506
  - Lack of corporate oversight
  - Lack of clarity in Nuclear Operating Standard-36

PLANT CHEMISTRY OVERSIGHT (CONTD.)

- Surveillance 290-0100
  - Zinc injection
- Corporate Audit 90-537 and 91-555
  - Chemistry technician qualifications
  - Work around incorrect procedures
- Corporate Audit 90-543
  - Chemistry software - no problems
- Surveillance 2-91-50
  - RCC HX Decontamination - observed chemistry sample processing

TECHNICAL ASSESSMENT OVERVIEW OF R-5

- Outage Modification Inspection (TA 90-010)
  - Technical review of design change
  - Plant operational safety
  - Modification and maintenance programmatic controls
  - Radiological practices
  - Twenty-nine QFRs and eighteen observations
- Plant Shutdown (TA 90-012)
  - One QFR

TECHNICAL ASSESSMENT OVERVIEW OF R-6

- Outage Modification Inspection (TA 91-005: Draft)
  - Technical Survey
  - Productivity Survey
  - Plant Operational Safety
  - Condition of primary process instrument lines
  - Performance of LLRT/ILRT
  - Six QFRs and seven observations
- R-6 Restart (TA-91-017)
  - One QFR and nine observations

FITNESS FOR DUTY

- One Assessment Prior to Program Implementation - December, 1989 (26 Findings - All Actions Complete)

- Two Program Audits with Technical Consultant

  - June 1990 - Sample collection and laboratory processes (26 findings - all actions complete)

  - June - November 1991 - Program implementation (21 findings - corrective actions in process

- Program Transferred to Support Services - December 1991

- Dedicated Program Manager Assigned December 1, 1991

FITNESS FOR DUTY (CONTD.)

- On-site Drug Screening Started June 1991
- On-site Drug Screening and Breath Testing Facilities are State Certified

COOPERATIVE PROBLEM SOLVING

- Developed a Customer/Supplier Agreement providing line management with QFR and recommendations for an adequate response to the finding.

- The following represents areas where L&A provided significant assistance in resolving issues.

- Audits and Technical Assessment identified a design inputs problem and participated with Engineering to develop a training program to ensure adequate documentation of design input criteria for design changes.

- Technical Assessment identified the problem and participated in the development of process improvements including a training program to ensure adequate 10CFR50.59 Safety Evaluations.

COOPERATIVE PROBLEM SOLVING (CONTD.)

- Audits identified weaknesses in the fitness for duty program and then provided a temporary program manager to resolve the problems and bring the program to maturity.

OPERATIONAL OVERVIEW ACTIVITIES

- Performance-based Overview of All Areas of Plant Activity, Including Operations
- Operational overview performed by plant QA and independent safety engineering group. Twenty percent of plant gas efforts are spent overviewing operational activities.
- Credibility in Operational Area Achieved by Use of Qualified Engineers
  - One-two ex-STAs (during last two years)
  - One WNP-2 certified SRO
  - One GE certified SRO

OPERATIONAL OVERVIEW ACTIVITIES (CONTD.)

- Overviews Include:
  - Daily review of operating logs
  - Detailed observation of major operational evolutions
  - Plant and system walkdowns
  - Detailed reviews of plant response to scrams and other events
- Products
  - Surveillance and assessment reports on specific overview topics
  - Bottom line message in the form of the licensing and assurance annual report

SUMMER 1991 OPERATOR TRAINING OVERVIEW

- Performed One Surveillance of Remediation Training (May 1991)

- Following the June 6 failures, established a full-time team overview of requalification training and EOP upgrade activities.

  - In training/operator performance area, used:
    - Full-time training consultant
    - Former NRC examiner
    - Ex-STA
    - Operational Assurance Manager (part time)

  - In EOP upgrade area, used:
    - Consultant on EOP technical issues
    - Consultant on EOP verification and validation
    - Plant QA engineer on ESP verification and validation

SUMMER 1991 OPERATOR TRAINING OVERVIEW (CONTD.)

- Results
  - Real time feedback on instructor/evaluator performance
  - Real time feedback on operator classroom and simulator performance
  - Issuance of quality finding reports covering needed training program improvements
  - Judgement on adequacy of phase I EOPs
  - Recommendations on EOP process upgrades
  - Technical and deviation justification recommendations for Phase II EOPs

SUMMER 1991 OPERATOR TRAINING OVERVIEW (CONTD.)

- Increased control room monitoring to ensure adequate focus on and control of plant activities during the disruptions caused by the requalification program problems.

FUTURE OPERATOR TRAINING OVERVIEW ACTIVITIES

- Continue Strengthening L&A Ability to Critique Simulator Training
  - Fill vacancies in trained staff
  - Increase participation in industry training information exchanges
- Continue to use outside EOP and training expertise - based on specific expertise required or size of the overview task.
- Active Oversight Role in:
  - 1991 corrective action plan effectiveness
  - Each requalification cycle
  - Replacement operator training
  - Remediation of crew A and staff crew
  - INPO-required training program self-assessments
  - Phase II EOP activities

FUTURE OPERATOR TRAINING OVERVIEW ACTIVITIES (CONTD.)

- Follow-up on open issues identified in present Supply System Board of Directors assessment of all technical training programs.

CONTAINMENT ATMOSPHERIC CONTROL (CAC) SSFI

- Purpose
  - Increase confidence in the system
  - Team effort consisting of four engineers
  - Completion expected in January, 1992
- Short Term Goals
  - Review design basis
  - Verify adequacy of surveillance procedures
- Long Term Goals
  - Improved system operation
  - System maintenance practices enhance reliability
  - Improved surveillance procedures

CORRECTIVE ACTION TIMELINESS AND EFFECTIVENESS

- Significant Support by Senior Management. Goals Established for Backlog Reduction with Tracking and Management Visibility. Direction at Monthly Plant Manager's Staff Meeting on Need to Meet Commitments.

- Event Corrective Action Group Assisting Plant Manager in Tracking and Expediting Completion of Corrective Action Commitments

- Process Addressed in TENERA Report as Needing Management Attention

- Procedure Upgrades Being Initiated to Streamline Process

CORRECTIVE ACTION TIMELINESS AND EFFECTIVENESS (CONTD.)

- Technical Assessment Report (Soon to be Issued) Will Address Recommendations to Gain Increased Management Control of Backlogs