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Facility:	Brunswick Steam Electric Plant, Units 1 & 2
Location:	8470 River Road SE Southport, NC 28461
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EXECUTIVE SUMMARY

Brunswick Steam Electric Plant, Units 1 & 2
NRC Inspection Report 50-325/98-02, 50-324/98-02

This inspection included a review of the licensee's implementation of 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants" [the Maintenance Rule]. The report covers a one-week period of inspection.

- Overall, the inspection team concluded that the licensee had a comprehensive Maintenance Rule program that met the requirements of 10 CFR 50.65, and the program was being effectively implemented. The overall program was detailed, well documented and was considered to be a strength.

Operations

- Licensed operators had a good understanding of the Maintenance Rule, and understood their responsibilities for implementing the Maintenance Rule. (Section O4.1)

Maintenance

- Required structures, systems, and components (SSCs) were included within the scope of the Maintenance Rule. (Section M1.1)

- The (a)(3) periodic assessment was considered an excellent evaluation of the licensee's compliance with their program and the program's compliance with NUMARC 93-01 and paragraph (a)(3) of 10 CFR 50.65. The assessment met the requirements of paragraph (a)(3) of 10 CFR 50.65 and was considered to be a strength. (Section M1.3)

- The approach to balancing reliability and unavailability was reasonable. The detailed evaluation of balancing in the (a)(3) periodic assessment was considered good. (Section M1.4)

- The licensee considered safety in establishment of goals and monitoring for the (a)(1) systems and components reviewed. (Section M1.6)

- Corrective actions, goals, and monitoring were comprehensive and were generally appropriate for the (a)(1) SSCs reviewed. (Section M1.6)

- In general, operating experience was being properly captured, and industry-wide operating experience was considered, as appropriate. (Section M1.6)

- A weakness in the Maintenance Rule process implementation was identified relative to: (1) proper alignment of system and component functions with performance monitoring groups (PMGs), (2) omission of a corrective action plan for a PMG, (3) use of incorrect equipment type codes in reviews for repetitive functional failures that could lead to not identifying repetitive functional failures across system boundaries, and (4) incorrect computer calculation of unavailability times when editorial changes were made to unavailability start and stop times. (Sections M1.6 and M1.7)

- In general, for (a)(2) SSCs, detailed performance criteria had been properly established; appropriate trending had been performed; corrective actions were taken when SSCs failed to meet performance criteria or experienced failures; industry-wide operating experience had been considered, where practical; and operating data had been properly captured. (Section M1.7)

- In general, plant material condition and housekeeping observed during walkdowns was excellent. However, the team did identify some minor discrepancies. Overall the excellent material condition and housekeeping was considered a strength. (Section M2.1)

- Self-assessments of the Maintenance Rule were considered to be excellent and successfully monitored the effective implementation of the Maintenance Rule. The team considered the assessments performed to be a program strength. (Section M7.1)

Engineering

- The overall quantitative approach used to perform risk ranking for SSCs in the scope of the Maintenance Rule was good. Performance criteria were established with substantial plant safety analysis (PSA). Documentation of PSA input was good. (Section M1.2)

- The current method of assuring the assumptions for reliability and availability in the PSA are conserved was good. (Section M1.2)

- The expert panel committee meeting discussions on covered topics were excellent. The expert panel meeting minutes were well documented, and were considered a strength. (Section M1.2)

- Based on the review of the sampled SSCs, the licensee's approach to risk-ranking for the Maintenance Rule was good. (Section M1.2)

- The overall approach, under paragraph (a)(3) of the Maintenance Rule, to assessing the risk-impact of maintenance activities was good. (Section M1.5)

- The use of the equipment out-of-service (EOOS) computer program to evaluate plant configurations was also good, as was the process for ensuring that critical safety functions were available during planned outages. (Section M1.5)

- System engineers were very knowledgeable of their systems, were proactive in corrective actions, and had a good understanding of Maintenance Rule requirements and how to apply the Rule to their systems. This area was considered a strength. (Section E4.1)

Report Details

Summary of Plant Status

Both Brunswick units operated at power during the inspection period.

Introduction

The primary focus of this inspection was to verify that the licensee had implemented a maintenance monitoring program which met the requirements of 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," (the Maintenance Rule). The inspection was performed by a team of inspectors that included a Team Leader, three Region II Inspectors, one Region II Senior Reactor Analyst, and three Resident Inspectors. In addition, NRC staff support was provided by one Senior Reactor Operations Engineer and one Reactor Operations Engineer from the Quality Assurance and Maintenance Branch, Office of Nuclear Reactor Regulation (NRR). The licensee provided an overview presentation of the program to the team on the first day of the inspection. The overview handout is included as Attachment 1 to this report.

I. OPERATIONS

04 Operator Knowledge and Performance

04.1 Operator Knowledge of Maintenance Rule

a. Inspection Scope (62706)

Prior to the onsite portion of the inspection, the team reviewed two months of operation's shift logs. During the onsite portion of the inspection, the team interviewed four licensed operators involved in on-shift operations to determine if they understood the general requirements of the Maintenance Rule and their particular duties and responsibilities for its implementation. Two were currently involved in senior reactor operator (SRO) duties, and two were performing reactor operator (RO) duties. From the interviews, the team determined the operators' understanding of the Maintenance Rule, how their current duties were impacted by the Maintenance Rule, and their understanding of how availability was tracked by the Rule.

b. Observations and Findings

In general, the operators interviewed understood the philosophy of the Maintenance Rule and their responsibilities associated with the Rule. The operators all believed that they were adequately trained and understood the requirements of the applicable procedures. All operators understood the need to restore equipment to operating condition and minimize SSC unavailabilities. The interviews indicated that the operations staff was sensitive to the importance of the logs as a source of information for Maintenance Rule record keeping.

Online Scheduling performed the risk evaluations for maintenance as part of its finalization of the schedule. Operations allowed work to be performed per schedule, and deviations were managed by the work week managers or by the shift superintendent after a risk evaluation subject to PSA-based limitations in Section 5.6.3 of OAP-025, "BNP Integrated Scheduling", Revision 4, dated February 27, 1998. The guidance in this section was rule based and was developed using knowledge gained from development of a previously used risk matrix. None of the operations staff interviewed had an understanding of the common risk terms used in the PSA, but this was not considered a problem because operations personnel do not perform evaluations which would require that knowledge. The operations staff knew who to contact for aid in evaluating risk due to emergent equipment problems while other equipment was out-of-service. All were aware of the equipment out-of-service (EOOS) computer program being used for risk evaluations but did not generally receive any direct output from EOOS.

The team's review of two months of control room logs from both units showed good detail in the logs for equipment operability and activities start and stop times. The site used availability as defined in ADM-NGGC-0101, Maintenance Rule Program. This definition differed from the NUMARC 93-01 definition, but was well defined, and was understood by the individuals interviewed.

c. Conclusions

Licensed operators had a good understanding of the Maintenance Rule, and understood their responsibilities for implementing the Maintenance Rule.

II. MAINTENANCE

M1 Conduct of Maintenance

M1.1 Scope of Structures, Systems, and Components Included Within the Rule

a. Inspection Scope (62706)

Prior to the onsite inspection, the team reviewed the Brunswick Final Safety Analysis Report (FSAR), licensee event reports (LERs), the emergency operating procedures (EOPs), previous NRC inspection reports, and information provided by the licensee. During this review, the team selected a sample of SSCs that had not been classified in the scope of the Rule, but that appeared to the team to be SSCs that should be in the scope. During the onsite portion of the inspection, the team used this list to verify that the licensee had adequately identified the SSCs that should be included in the scope of the Rule in accordance with 10 CFR 50.65(b).

b. Observations and Findings

The licensee appointed an expert panel to perform several Maintenance Rule implementation functions including establishing the scope of the Maintenance Rule. The panel reviewed 185 systems and structures for Units 1 and 2 of which 132 were determined to be in the scope of the Rule.

The team reviewed the licensee's Maintenance Rule database in an effort to verify that all required SSCs were included within the scope of the Maintenance Rule. The team's review was performed to assure the scoping process included the following:

- All safety-related SSCs that are relied upon to remain functional during and following design basis events and ensure the integrity of the reactor coolant pressure boundary, the capability to shut down the reactor and maintain it in a safe shutdown condition, and the capability to prevent or mitigate the consequences of accidents that could result in potential offsite exposure comparable to the 10 CFR, Part 100 guidelines,

- Non-safety SSCs that are relied upon to mitigate accidents or transients,

- Non-safety SSCs which are used in the plant emergency operating procedures,
- Non-safety SSCs whose failure could prevent safety-related SSCs from fulfilling their safety-related function, and
- Non-safety SSCs whose failure could cause a reactor trip or actuation of a safety-related system.

The team reviewed the licensee's database and verified that all required structures, systems, and components were included in the rule.

c. Conclusions

Required structures, systems, and components were included within the scope of the Rule.

M1.2 Safety or Risk Determination

a. Inspection Scope (62706)

Paragraph (a)(1) of the Maintenance Rule requires that performance monitoring and goals be commensurate with safety. Implementation of the Maintenance Rule using the guidance contained in NUMARC 93-01 requires that safety be taken into account when setting performance criteria and monitoring under (a)(2) of the Maintenance Rule. This safety consideration would then be used to determine if SSC functions be monitored at the train, system, or plant level. Also, Section 9.3.2 of NUMARC 93-01 recommends that risk-significant SSC performance criteria be set to assure that the availability and reliability assumptions used in the risk-determining analysis (i.e., PSA) are maintained. The team reviewed the licensee's methods for making these required safety determinations.

b. Observations and Findings

The team reviewed documentation associated with determining risk-ranking and performance criteria for the Maintenance Rule. The team attended an expert panel meeting, and interviewed some of its members.

b.1 Risk Ranking

The licensee's PSA model used for the current ranking process was that of the individual plant evaluation (IPE) submitted to the NRC, dated August 1992, updated to reflect plant changes incorporated through October 1995. The IPE was a full scope Level 1 analysis for Unit 2, for internal events and loss of offsite power, and a Level 2 analysis. It used generic data and plant specific data gathered from 1987 through 1991 as the basis for its initiating event frequencies, and for its availability and reliability data. The IPE was developed using the cutset and fault tree analysis (CAFTA) set of PSA codes and had a core damage frequency (CDF) of 2.7E-5/year. The updated Level 1 model has a CDF of 9.2E-6/year. Model changes were made to reflect plant design changes to update the loss of offsite power fault tree, and also to accommodate the removal of the fire water as a source of low pressure injection in case of a station blackout. Plant specific availability and reliability data for major components were also updated. The licensee used this updated model for the risk-rankings used in the Maintenance Rule, and as the basis for EOOS computer evaluations used in planning equipment out- of-service schedules.

The team reviewed the truncation limits used during the risk-ranking process. Truncation limits are imposed on PSA models in order to limit the size and complexity of the results to a manageable level. Brunswick used a truncation level of E-10 when quantifying their PSA for use for Maintenance Rule applications. This was five orders of magnitude less than the internal event core damage frequency. The truncation level used appeared to be appropriate for use to perform the risk-ranking for the Maintenance Rule.

The team reviewed a sample of SSCs covered by the Rule that had been categorized as non-risk significant to assess if the licensee had adequately established the safety significance of those SSCs. The inspector reviewed an analysis titled "Identification of High Safety Significant Systems within Maintenance Rule Scope", dated March 6, 1998. The licensee used risk achievement worth (RAW), risk reduction worth (RRW) and percent contribution to CDF as criteria for ranking the systems. The numerical risk-ranking given in the PSA analysis supported the decisions made by the licensee's expert panel. The expert panel

also considered insights gained from the earlier Level 2 analysis and the IPE for external events in their decisions. Critical functions required during plant shutdown were also evaluated.

Based on this review, the team determined that the licensee's process was adequate to perform the risk ranking for the Maintenance Rule.

b.2 Performance Criteria

The team reviewed the licensee's performance criteria to determine if the licensee had adequately set performance criteria under (a)(2) of the Maintenance Rule consistent with the assumptions used to establish the safety significance. Section 9.3.2 of NUMARC 93-01 recommends that risk-significant SSC performance criteria be set to assure that the availability and reliability assumptions used in the risk-determining analysis (PSA) are maintained.

Based on interviews, the inspector determined the original first estimates for performance goals were determined with input from the engineers responsible for the specific equipment. The estimates were reviewed by the expert panel, and forwarded to the PSA specialists for review. Recommended changes were sent back to the expert panel for approval. The team reviewed an analysis titled " PSA Evaluation of Maintenance Rule Performance Criteria", transmitted by memo NF-98A-0045, dated February 18, 1998. The analysis was a sensitivity study to determine the impact of the Maintenance Rule criteria on CDF. Individual systems or groups of components were evaluated to determine impact on CDF, and then all assumptions were evaluated together to measure the change in CDF. The licensee emphasized the value of checking groups and systems at their assumed Maintenance Rule criteria, and they recognized the limiting calculation with all systems set at their maximum was not a normal use of PSA. The analysis results were very well documented.

b.3 Expert Panel

The team reviewed the licensee's process and procedures for the expert panel. The licensee had established an expert panel in accordance with the guidance provided in NUMARC 93-01. The expert panel's responsibilities included the authority for decisions regarding Maintenance Rule scope, risk-significance, performance criteria selection, changing the classification of systems from (a)(2) to (a)(1), and making recommendations for changing (a)(1) systems to (a)(2). The

expert panel had representation that included operations, maintenance, work control, PSA group, regulatory affairs, and plant engineering. The team reviewed the qualifications of the expert panel and found the panel had a great deal of plant and industry experience, and technical training. A review of the meeting minutes of meetings conducted since February 1995, showed the minutes were very well detailed, with good explanations for the basis of panel decisions. This documentation of the details of the decisions was considered a strength. The site had a requirement for initial and continuing training for expert panel members. A review of the topics covered showed most training focused on operating experience from NRC-conducted activities, or tools and procedures onsite to implement various parts of the Rule.

The team attended an expert panel meeting conducted March 18, 1998. The first portion of the meeting was to conduct program required continuing education, which consisted of part two of outage risk assessment management (ORAM) training. Issues were then discussed, including scoping issues, and the potential return of an (a)(1) system to (a)(2) status. The team noted a good discussion of the issues raised. The meeting minute inputs were reviewed as each issue was completed. The bases for all decisions were well documented.

c. Conclusions

The overall quantitative approach used to perform risk-ranking for SSCs in the scope of the Maintenance Rule was good. Performance criteria were established with substantial PSA input. Documentation of PSA input was good. The current method of assuring the assumptions for reliability and availability in the PSA are conserved was good. The expert panel committee meeting discussions on covered topics were excellent. The expert panel meeting minutes were well documented, and were considered a strength. Based on the review of the sampled SSCs, the licensee's approach to risk-ranking for the Maintenance Rule was good.

M1.3 Periodic Evaluation

a. Inspection Scope (62706)

Paragraph (a)(3) of the Maintenance Rule required that performance and condition monitoring activities and associated goals and preventive maintenance activities be evaluated taking into account, where practical, industry-wide operating experience. This evaluation was

required to be performed at least one time during each refueling cycle, not to exceed 24 months between evaluations. The team reviewed the licensee's periodic evaluation process, including the current periodic Maintenance Rule self-assessment to determine if it met the requirements of 10 CFR 50.65, paragraph (a)(3).

b. Observations and Findings

At the time the Maintenance Rule was implemented on July 10, 1996, BNP Unit 1 was operating in Cycle 10 and Unit 2 was operating in Cycle 11. As allowed by NUMARC 93-01 for multiple unit stations, BNP conducted one period assessment during the operating cycle that included an assessment of both Units. The first periodic assessment covered the period from July 10, 1996, until the end of the Unit 2 Outage, October 31, 1997. The assessment was performed during the week of January 19-23, 1998, and utilized the full time support of approximately 30 CP&L and expert peer utility and consultant personnel who thoroughly analyzed every aspect of the Maintenance Rule implementation.

The periodic assessment was conducted in accordance with Section 9.11, "Periodic Assessment", of CP&L Procedure ADM-NGGC-0101, "Maintenance Rule Program", which met or exceeded the requirements of 10 CFR 50.65 and NUMARC 93-01, Revision 2. The periodic assessment was also, in part, a followup to an extensive self-assessment that was performed in April 1997. This assessment resulted in significant program improvements including scoping at the function versus system level. This approach significantly expanded performance monitoring and resulted in considerably more involvement of the system engineers. The use of industry operating experience was verified as being well integrated with system engineering, scoping, reviews of functional failures, and safety significant and cause determinations. Maintenance rework was also identified as having been reduced from 3% in July 1996 to .3% in September 1997, which represented a significant improvement in this area of maintenance. The team noted one area where the licensee could improve future periodic assessments, i.e., additional appraisal of changes in maintenance effectiveness, that resulted from the maintenance rule program.

The periodic assessment was detailed and took into account SSC's performance, condition monitoring, associated goals and preventive maintenance activities.

The next periodic assessment is scheduled for performance within the next 18 months (normal fuel cycle), but no later than February 1, 2000, to meet Maintenance Rule requirements for conducting an assessment every refueling cycle, not to exceed 24 months between assessments. The licensee also planned to perform a followup assessment to the first periodic assessment in October 1998.

c. Conclusions

The (a)(3) periodic assessment was considered an excellent evaluation of the licensee's compliance with their program and the program's compliance with NUMARC 93-01 and paragraph (a)(3) of 10 CFR 50.65. The assessment met the requirements of paragraph (a)(3) of 10 CFR 50.65 and was considered to be a strength.

M1.4 Balancing Reliability and Unavailability

a. Inspection Scope (62706)

Paragraph (a)(3) of the Maintenance Rule required that adjustments be made where necessary to ensure that the objective of preventing failures of SSCs through (preventive) maintenance was appropriately balanced against the objective of minimizing unavailability of SSCs due to monitoring or preventive maintenance. The team reviewed the licensee's approach to balancing system reliability and unavailability for risk-significant systems.

b. Observations and Findings

The licensee had scheduled balancing reviews during periodic assessments, not to exceed 24 months. The guidance and requirements for balancing reliability and unavailability were covered in the licensee's Procedure ADM-NGGGC-0101, NRC Regulatory Guide 1.160, and NUMARC 93-01.

The team reviewed the licensee's process for balancing a function's reliability and unavailability. The system engineers were required to perform a balancing review for their systems on a monthly basis for high risk safety significant systems. In addition, a balancing review was performed during the periodic system assessment performed January 19 - 23, 1998. The licensee's process consisted of monitoring SSC performance against the established SSC performance criteria. The process considered a function balanced if the performance criteria were met. This method was in compliance with NUMARC 93-01.

The licensee had completed their first (a)(3) periodic assessment, and it included a good, detailed section that addressed all areas of balancing for high risk safety significant systems. This balancing section was included and maintained as a table in the Maintenance Rule data base for easy use, updating, and recall when needed. The performance criteria for reliability and unavailability for each of the high risk safety significant systems was reviewed for the purpose of evaluating the balance of preventing failures with minimizing SSC unavailability. All systems reviewed were found to be balanced.

c. Conclusions

The approach to balancing reliability and unavailability was reasonable. The detailed evaluation of balancing in the (a)(3) periodic assessment was considered good.

M1.5 Plant Safety Assessments Before Taking Equipment Out-of-Service

a. Inspection Scope (62706)

Paragraph (a)(3) of the Maintenance Rule states that the total impact on plant safety be taken into account before taking equipment out-of-service for monitoring or preventive maintenance. The team reviewed the licensee's procedures and discussed the process with plant operators and work control.

b. Observations and Findings

The team interviewed two work-week managers, the online scheduling project analyst, the site PSA analyst, and members of operations on shift in the control room, all of whom performed the evaluations for equipment out-of-service. Both work-week managers were new to the work planning group. One work-week manager was an SRO on shift prior to moving to work control.

The schedules were found go through a multiple week development process. In the week prior to the work week, the online scheduling project analyst runs EOOS for the projected work. Changes to the schedule are made to minimize risk from projected equipment condition. EOOS had the CAFTA plant model loaded into it and ran in a hybrid mode with cutsets developed at E-12 and emergent work evaluated at E-7 truncation. The

model was a Level 1 PSA. EOOS was also used to plan future equipment outages and to evaluate the impact of equipment failures on plant conditions.

The operations staff indicated that for emergent equipment issues a risk evaluation would be completed. This was primarily deterministic and rule based. These rules were based on input from the site PSA. The online scheduling project analyst and the site PSA analyst have been called on occasions when the configuration fell outside of the guidance. The site PSA analyst and online scheduling project analyst had very good knowledge of EOOS. The use of EOOS for determining the risk input for plant equipment out-of-service evaluations was good.

Shutdown risk evaluations were performed using ORAM. ORAM monitors critical safety functions by verifying support equipment availability. The licensee's shutdown risk evaluation process was good.

c. Conclusions

The overall approach, under paragraph (a)(3) of the Rule, to assessing the risk impact to maintenance activities was good. The use of the EOOS computer program to evaluate plant configurations was also good, as was the process for ensuring that critical safety functions were available during planned outages.

M1.6 Goal Setting and Monitoring for (a)(1) SSCs

a. Inspection Scope (62706)

Paragraph (a)(1) of the Maintenance Rule requires, in part, that licensees shall monitor the performance or condition of SSCs against licensee-established goals, in a manner sufficient to provide reasonable assurance that the SSCs are capable of fulfilling their intended functions. The Maintenance Rule further requires that goals be established commensurate with safety and that industry-wide operating experience be taken into account, where practical. Also, when the performance or condition of the SSC did not meet established goals, appropriate corrective action was to be taken.

The team reviewed the systems and components listed below for which the licensee had established goals for monitoring of performance to provide reasonable assurance the system or components were capable of fulfilling their intended function. The team verified that industry-wide operating

experience was considered, where practical, that appropriate monitoring was being performed, and that corrective action was taken when SSCs failed to meet goals or when a SSC experienced a maintenance preventible functional failure (MPFF).

The team reviewed program documents and records for four systems or components that the licensee had placed in the (a)(1) category in order to evaluate this area. The team also discussed the program with licensee management, the Maintenance Rule engineer, system engineers, and other licensee personnel.

b. Observations and Findings

b.1 Unit 1 Feedwater (FW) - System 3050

The purpose of the feedwater system is to preheat water received from the condensate and heater drains systems and pump it forward at sufficient pressure and flow so as to maintain the required reactor vessel water level during normal and emergency operation. The feedwater system had been classified as (a)(1) since December 3, 1997 when the Unit 1 train B reactor feedwater pump turbine (RFPT) tripped following failure of both main lube oil pump motors. Investigation revealed that the main lube oil pump motors had failed due to the recirculation pump operation at run out conditions following failure of the hydraulic oil supply piping in the RFPT lube oil sump. The same run of piping had failed at welds in two different locations. This event required entry into (a)(1) because unplanned electrical losses due to the event exceeded the plant level criteria of 25000 MWH established for Maintenance Rule systems. The team verified that the licensee had considered previous operating experience when taking corrective actions, and had implemented goal setting and monitoring as required by paragraph (a)(1) of the Rule.

In addition to failure of the hydraulic oil supply piping in the RFPT lube oil sump, the digital feedwater control system had experienced repetitive Maintenance Rule functional failures due to a design deficiency and had been classified as (a)(1) since November 5, 1997. The failures occurred during down-powers. A modification had been completed for Unit 2 during the last outage and no failures had occurred since completion of the modification. The modification, scheduled to be installed in Unit 1 during the outage starting in April 1998, eliminates the metal oxide semiconductor field effect transistor (MOSFET) circuit logic, which has caused the spurious run backs. The expert panel

concurred that the cause was known and the goal was to reconfigure the circuit logic on Unit 1 so that it would no longer be susceptible to premature recirculation system pump run backs. Goals were determined not to be trendable due to the nature of the problem. Experience to date (two down powers on Unit 2) indicated that the identified corrective actions had resolved the condition and were sufficient to demonstrate improved performance. However, the licensee planned to keep the digital feedwater control system for both units in (a)(1) until corrective actions are complete on Unit 1.

b.2 Unit 1 Nuclear Service Water (NSW) Pump B - System 4060

When preparations were made by the team to review the NSW system, the entire system was in (a)(2) status. However, a PSA review in February 1998 resulted in changing the functional failure (FF) criteria from two FFs per 36 months to one FF per 36 months. Based on this change, the PMG 2656 for the Unit 1 NSW pump B was placed in (a)(1) status due to exceeding the performance criteria. The two functional failures on the 1B NSW pump motor coolers were not identical. A failure on November 7, 1995, was due to an incorrectly installed inlet nipple. The second failure on August 30, 1996, was due to a pin hole leak in the tubing to block connection. Per Section 9.9.3.2 of ADM-NGGC-0101, Rev. 9, setting goals was not necessary when an approved technical assessment demonstrates that the cause of a failure was known and it was not likely to re-occur. In this situation the cause of the failures were due to improper fabrication. The corrective action was to replace all of the motor coolers with properly fabricated ones. This goal was non-trendable as the events causing the (a)(1) condition would be resolved by replacement of the motor coolers. However, the expert panel required that the system remain in (a)(1) status until all the service water coolers had been replaced.

b.3 4KV AC Distribution - System 5170

The 4KV AC distribution system was classified as a high risk safety significant system that had several standby functions. The system included BOP (balance of plant) buses 1B, 1C, 1D, 2B, 2C, 2D, and Division I and Division II E-Buses (safety essential buses) E1, E2, E3, and E4. The circuit breakers feeding these buses were scoped in this system. The load side circuit breakers from these buses were scoped in the systems fed by the breakers. The system had been classified as (a)(1) because of repetitive failures of the lockout relays caused by lubrication hardening. A thorough root cause/event review of the

problem had been completed, and the identified corrective action was refurbishment of all of the lockout relays. The goal for returning the system to (a)(2) status was no additional failures due to lubrication hardening from the time the relays are refurbished to the performance of the next scheduled preventive maintenance. The team concluded the corrective action and the (a)(1) goal were adequate.

b.4 Control Rod Drive Hydraulic (CRD) System - System 1070

The B train CRD pump of the Unit 1 CRD system, had been classified as (a)(1) on December 16, 1997, due to excessive unavailability. The pump motor had failed due to an electrical fault after operation under high current conditions. Unavailability time was exceeded due to length of time required to install a replacement motor. The remaining portions of the CRD system 1070 had not experienced unavailability problems and had remained classified as (a)(2). The team verified that the licensee had implemented goal setting and monitoring as required by paragraph (a)(1) of the Rule for the CRD System.

b.5 Instrument Air System - System 6135

The nitrogen backup supply to the instrument air system was classified as (a)(1) on June 25, 1997, due to problems with excess nitrogen consumption during testing for soft seated check valves. Additionally, this portion of System 6135 was classified as (a)(1) on December 16, 1997, due to repetitive functional failures of 1-RNA-V315, Unit 1 drywell division I SRV backup nitrogen supply check valve. This portion of System 6135 performed a safety-related function to provide a backup supply of nitrogen from safety-related accumulators to the SRVs and other safety-related equipment to support safe shutdown following loss of electrical power or loss of normal supply of instrument air. The remaining portions of System 6135 had not experienced reliability problems and had remained classified as (a)(2). With loss of instrument air, the nitrogen check valves must seal to prevent loss of nitrogen to provide for operation of the above components. The licensee had identified the problems with excessive nitrogen consumption and 1-RNA-V315 failures during routine testing of the nitrogen backup supply. The team reviewed the licensee's evaluation of this issue and concurred with the determination that the most probable cause of the problem was fouling of the check valves by debris from upstream carbon steel instrument air piping. Corrective actions planned by the licensee should limit potential fouling of the check valves. The cause of the repetitive functional failures of 1-RNA-V315 was believed to be

mechanical degradation of the valve internals. The licensee planned to perform additional inspections of this check valve during subsequent refueling outages, evaluate potential causes, and develop recommended actions. The team verified that the licensee had implemented goal setting and monitoring as required by paragraph (a)(1) of the Rule for System 6135.

b.6 Condensate Deep Bed and Out Demineralizers - System 3077

For this system the team reviewed functions, performance monitoring groups, performance criteria, and performance summary. During the review the team identified the following two problems.

(1) The Maintenance Rule applies to functions of structures, systems, and components that are safety-related or mitigate accidents, or could affect safety-related functions, reactor trips, safety system actuation, or the successful performance of EOPs. The Maintenance Rule program grouped subsystems, trains, components, and devices into PMGs, which were assigned to plant engineers responsible for specific plant systems. Performance criteria were set for each PMG. System functions were aligned with PMGs; each PMG may be aligned with several Maintenance Rule functions; conversely, each Maintenance Rule function may be aligned with several PMGs.

System 3077 has six Maintenance Rule functions. One of these functions (No. 3124) provides an alternate source for low pressure coolant injection to the reactor, which was required by five EOPs. Examination of the relevant Maintenance Rule data found that this function had not been tied to the PMGs for the condensate booster pumps. Because work requests and job orders identify PMGs, not Maintenance Rule functions, potential functional failures could be missed during engineering reviews.

Subsequent to identification of the above problem by the team, the expert panel met on March 18 to review a corrective action plan that had been initiated to resolve the problem. The immediate corrective action to tie Function No. 3124 to the six associated PMGs had been completed. A preliminary review of the database by the licensee found 25 additional Maintenance Rule functions that had not been correctly aligned with associated PMGs. These were corrected. All corrective actions had not been completed at the completion of the inspection, but no problems had been identified

that caused a function's performance criteria to be exceeded. The team considered the errors in alignment of PMGs with system functions to be an example of a Maintenance Rule process implementation weakness (see the discussion below in this Section and Sections M1.7 b.3 and M1.7 b.6 for additional examples of this process implementation weakness).

(2) System 3077 was placed in (a)(1) status on February 6, 1998, following failure of Unit 1 Condensate Booster Pump A. The PMG for the piping and valves in System 3077 was designated as "remainder". The team found that the corrective actions were applicable to the booster pumps but did not adequately address problems involving the "remainder" PMG, which had also been placed in (a)(1) status. The "remainder" PMG failures involved actuator problems for the E (effluent) valves at the discharge of the deep bed demineralizers. Although the corrective actions for system 3077 did not address "remainder" PMG failures, it was determined that the E valve problems were being addressed as part of a corrective action plan for resolving problems with similar valves in the condensate filter demineralizer system (System 3076).

Subsequent to identification of the above problem by the team, the expert panel met on March 18 to review a corrective action plan initiated to resolve the "remainder" PMG problems. The team considered the omission of a corrective action plan for the "remainder" PMG failures from the system 3077 corrective action plan to be a second example of a Maintenance Rule process implementation weakness (see the discussion above and Sections M1.7 b.3 and M1.7 b.6 for additional examples of this process implementation weakness).

c. Conclusions

The licensee had considered safety in establishment of goals and monitoring for the (a)(1) systems and components reviewed. Corrective actions, goals, and monitoring were comprehensive and were generally appropriate for the (a)(1) SSCs reviewed. In general, operating experience was being properly captured, and industry-wide operating experience was considered, as appropriate. Two examples of a weakness in Maintenance Rule process implementation were identified relative to proper alignment of system and component functions with PMGs and omission of a corrective action plan for a PMG.

M1.7 Preventive Maintenance and Trending for (a)(2) SSCs

a. Inspection Scope (62706)

Paragraph (a)(2) of the Maintenance Rule states that monitoring as required in paragraph (a)(1) is not required where it has been demonstrated that the performance or condition of an SSC is being effectively controlled through the performance of appropriate preventive maintenance, such that the SSC remains capable of performing its intended function.

The team reviewed selected SSCs listed below for which the licensee had established performance criteria and was trending performance to verify that appropriate preventive maintenance was being performed, such that the SSCs remained capable of performing their intended function. The team verified that industry-wide operating experience was considered, where practical, that appropriate trending was being performed, that safety was considered when performance criteria were established, and that corrective action was taken when SSCs failed to meet performance criteria, or when an SSC experienced an MPFF.

The team reviewed program documents and records for selected SSCs that the licensee had placed in the (a)(2) category in order to evaluate this area. The team also discussed the program with licensee management, the Maintenance Rule coordinator, engineering and maintenance personnel, and other licensee personnel.

b. Observations and Findings

b.1 Structures

The licensee's Maintenance Rule structural baseline walkdowns were 91% complete at the time of the team's inspection. The team reviewed EGR-NGGC-0351 Revision 5, "Condition Monitoring of Structures," and interviewed the structural engineers to determine their understanding of the Maintenance Rule. In addition, historical data, functional failures, scoping and performance (monitoring) criteria for each structure in the Maintenance Rule, results of the licensee's structural baseline walkdowns, results of vendor inspections performed on roofs of buildings using thermography, and corrective actions taken or planned were reviewed. Also, the team conducted walkdown inspections of the following structures to determine the material condition: relay building, chlorination building, service water building, auxiliary

boiler building, diesel generator and tank vault building, portions of the turbine building, and portions of the Unit 1 reactor building. In general, the structures observed were in excellent condition. However, some minor material condition deficiencies were identified by the team during the walkdown inspections and are discussed further in paragraph M.2.1. Industry operating experience was properly reviewed by the structural engineers.

b.2 Service Water System (SW) - System 4060

The SW system is designed to meet the SW flow requirements for normal operation (including normal operation, outage or shutdown operation, hurricane operation, and flood operation) and for operation during and subsequent to postulated design basis accident conditions. Review of the SW system revealed that appropriate performance criteria had been established for each of the SW performance monitoring functions. Maintenance Rule event log reports, unavailability trend reports, work orders and condition reports for the previous 24-month period were reviewed and found to be satisfactory. Operating experience was utilized by the licensee in determining corrective actions.

b.3 480V AC Distribution System - System 5175

The 480V AC distribution system was classified as a high risk safety significant system with several standby functions. The system scoped for the Maintenance Rule included both the BOP (balance of plant) and safety-related essential Division I and Division II distribution buses and the circuit breakers feeding these buses. The load side circuit breakers from these buses were not scoped as part of System 5175. Review of the 480V AC distribution system determined that appropriate performance criteria had been established and monitoring was being accomplished against those criteria. The performance criteria included both unavailability and reliability. From a review of the problems associated with the system the inspectors determined that appropriate corrective actions had been taken for deficiencies. Operating experience was being used in system monitoring. No significant deficiencies were noted against the system.

During the review, the team noted that the operator logs, used as one of the sources to identify unavailability time, were not user friendly for this purpose and could result in not accurately capturing unavailability time. The licensee had previously identified this problem and discussed it in the (a)(3) periodic assessment. The team reviewed the licensee's

planned corrective action for improving monitoring unavailability time. The corrective action plans included revising the operator log process to use a new stamp indicating unavailability time by system, time, and function. The revised operator logs could be down-loaded once per day into the Maintenance Rule database for use by the system engineers. This corrective action was scheduled for implementation by the end of July 1998. The team concluded this change in how unavailability is collected and documented should help ensure that Maintenance Rule equipment unavailability times are accurately counted.

Also, during review of work requests and job orders associated with the breakers which were Maintenance Rule scoped with the appropriate load system, the team noted a number of fuse failures (FF). The team questioned the licensee's process to identify repetitive FF across systems. The licensee indicated that repeat FFs were identified by a database search which was performed by the system engineer when a FF is identified. The licensee's Maintenance Rule program allows the system engineer to develop a database log entry for a FF and search the database for repeat FFs by ensuring the appropriate equipment type code was selected. Because of the way the type codes could be defined, the team was concerned that the process might allow repetitive failures of common components across systems to go undetected. To address the team's concern, the licensee reviewed numerous functional failures for the previous 36-month period to identify those related to blown fuses or electrical breaker problems which may not have been included in the correct equipment type code. Based on this review, the licensee identified 35 events where changes to the tag number, equipment type, or failure cause were needed. However, no new repeat FFs were identified. Although no new repetitive FFs were identified, the team was concerned that the process could result in not identifying all repetitive FFs across systems if the appropriate equipment type coding did not occur as part of the database search. This was identified as a third example of a Maintenance Rule process implementation weakness(see Sections M1.6 b.6 and M1.7 b.6 for additional examples of this process implementation weakness).

b.4 Condensate System - System 3070

The condensate system was classified as normal operating non-risk significant, non-safety related, and a non-standby system. The performance criteria included both reliability and plant level criteria. System 3070 was scoped for the Maintenance Rule as a portion of the condensate system from the condenser hotwell forward to the condensate

filter demineralizers. Review of the condensate system determined that appropriate performance criteria had been established, and monitoring was being accomplished against those criteria. Review of the problems associated with the system indicated that appropriate corrective actions had been taken for failures. Operating experience was being used in system monitoring. No deficiencies were noted concerning this system.

b.5 Automatic Depressurization System (ADS) - System 2055

The licensee had classified the ADS as a safety-related, standby, and low safety significant system. Review of the ADS determined that appropriate performance criteria had been established and monitoring was being accomplished against those criteria. Review of the problems associated with the system determined that appropriate corrective actions had been taken for failures. Operating experience was being used in system monitoring. No deficiencies were noted concerning this system.

b.6 Control Rod Drive Hydraulic (CRD) System - System 1070

The licensee had classified the CRD system as a safety-related, standby, and high safety significant system.

During a licensee review of unavailability data for System 1070 conducted as preparation for this inspection the assigned system engineer identified incorrect cumulative unavailability times for this system. Additional licensee review identified several examples of incorrect unavailability data for other systems. These examples existed where unavailability had not been recalculated properly by the licensee's Maintenance Rule computer program, when editorial changes were made by the system engineers to the unavailability start and stop times. The correct unavailability time would have been recalculated in each case had the system engineer tabbed to a new field after entering a new stop time. However, not all system engineers had been aware of the need to perform this step. The licensee determined that five systems other than CRD had been affected by this problem. A total of 23 examples of incorrect unavailability time were identified by the licensee as the result of this problem. In each case the actual unavailability was less than the unavailabilty performance criteria and the system remained in (a)(2) status. The licensee issued Condition Report (CR) 98-00643 to resolve this problem. Corrective actions included revising the computer program to calculate unavailability times properly when changes were made. This CR was reviewed and the team

determined that proposed corrective actions were acceptable. The incorrect calculation of unavailability times was considered to be a fourth example of a Maintenance Rule process implementation weakness (see Sections M1.6 b.6 and M1.7 b.3 for additional examples of weakness in process implementation).

Review of System 1070 determined that appropriate performance criteria had been established and monitoring was being accomplished against those criteria. Review of the problems associated with this system determined that appropriate corrective actions had been taken for failures. Operating experience was being used in system monitoring. No deficiencies were noted concerning this system.

c. Conclusions

In general, for (a)(2) SSCs, detailed performance criteria had been properly established; appropriate trending had been performed; corrective actions were taken when SSCs failed to meet performance criteria or experienced failures; industry-wide operating experience had been considered, where practical; and operating data had been properly captured. However, two examples of a weakness in Maintenance Rule process implementation were identified relative to: (1) use of incorrect equipment type codes in reviews for repetitive functional failures that could lead to not identifying repetitive functional failures across system boundaries, and (2) incorrect computer calculation of unavailability times when editorial changes were made to unavailability start and stop times.

M2 Maintenance and Material Condition of Facilities and Equipment

M2.1 Material Condition Walkdowns

a. Inspection Scope (62706)

During the course of the reviews, the team performed walkdowns of selected portions of the following systems and plant areas, and observed the material condition of these SSCs:

- Feedwater System
- Service Water System
- 4KV AC Distribution System
- Condensate System
- 480V AC Distribution System

- Instrument Air System
- Control Rod Drive Hydraulic System
- Other Balance of Plant Areas
- Relay building
- Chlorination building
- Service Water building
- Auxiliary Boiler building
- Diesel Generator and Tank Vault building
- Turbine Building
- Unit 1 Reactor building

b. Observations and Findings

The team conducted the walkdowns accompanied by the responsible system engineer. In general, the engineers demonstrated a good level of knowledge and familiarity with their assigned system. Housekeeping in structures and in the general area around the systems and components was excellent. Piping, components and structures were painted and clean with very few indications of corrosion, oil leaks, or water leaks. However, the team did identify some minor discrepancies. Examples of discrepancies noted were:

- A crack was observed in an area of concrete at the 20 foot elevation in the service water building.

- Fuel oil transfer pumps A&B were leaking in the 1, 2, 3, & 4 tank rooms of the diesel generator building.

- A diesel generator building supply plenum air supply fan was missing an anchor bolt in one of four supports.

- Several pipe and valve leakage problems were observed on the deaerator components on the auxiliary boiler building roof.

- Water intrusion problems were noted in the relay building.

- Water on the floor at the two foot elevation of the diesel generator building due to a clogged floor drain.

- Insulation was loose on the No. 1, 2, 3, 4, and 5 evaporators in the chlorination building.

- The 1B Nuclear Service Water pump motor lower oil plug was leaking.

In addition to the minor material condition discrepancies identified, during one team member's walkdown, the inner and outer door interlocks for the NW 50 foot elevation doors of the Unit 1 reactor building were not working. The licensee took immediate appropriate corrective actions and issued CR 98-00676 to evaluate the condition and document corrective actions.

All of the discrepancies identified by the team were immediately addressed by the licensee. Some of the discrepancies had been previously identified and justified by the licensee, e.g., the missing anchor bolt had been justified by Design Calculation 0-01534A-206. Although some of the structural deficiencies had not been identified in the licensee's structural baseline walkdowns, the team could not determine whether the conditions had existed at the time of the baseline walkdown or had occurred after the baseline walkdowns. Also, since the original baseline inspections were performed, significant revisions to the structural program have occurred, improving the specificity and detail of the acceptance criteria.

c. Conclusions

In general, plant material condition and housekeeping observed during walkdowns was excellent. However, the team did identify some minor discrepancies. Overall the excellent material condition and housekeeping were considered a strength.

M7 Quality Assurance in Maintenance Activities

M7.1 Licensee Self-Assessments

a. Inspection Scope (62706)

The team reviewed the licensee's self-assessments to determine if the Maintenance Rule independent evaluations had been conducted and the findings properly addressed.

b. Observations and Findings

The following self-assessments were reviewed:

- Assessment No. 97-00177-10, "Maintenance Rule Implementation," Dates of Assessment: April 14-28, 1997,
- Assessment No. 97-00177-15, "BESS Maintenance Rule Implementation," Dates of Assessment: December 10, 1996 through January 24, 1997,
- Performance Evaluation Section Assessment No. 96-08-MA-C, "Maintenance Rule Pre-implementation Assessment," dated May 24, 1996 (this assessment was conducted at Brunswick, Harris, and Robinson),
- Self-assessment No. 95-00037, "Maintenance Rule Implementation," Dates of Assessment: February 8 thru 28, 1995, and
- Surveillance No. B-MRS-95-01, "Maintenance Rule Management Requested Surveillance," Dates of Assessment: October 2-11, 1995.

The quality of the audits was excellent. The assessments were detailed and thoroughly addressed Maintenance Rule requirements and related items. The assessments identified numerous findings which helped to establish a good Maintenance Rule program. Individuals who conducted the assessments also demonstrated exceptional understanding of the elements and underlying principals of the Maintenance Rule. Corrective actions were appropriately implemented. The team considered the April 1997 and January 1997 assessments to be the most thorough prior to the periodic assessment.

c. Conclusions

Self-assessments of the Maintenance Rule were considered to be excellent and successfully monitored the effective implementation of the Maintenance Rule. The team considered the assessments performed to be a program strength.

III. ENGINEERING

E2 Engineering Support of Facilities and Equipment

E2.1 Review of Updated Final Safety Analysis Report (UFSAR) Commitments (62706)

A recent discovery of a licensee operating their facility in a manner contrary to the UFSAR description highlighted the need for a special focused review that compares plant practices, procedures and parameters to the UFSAR descriptions. While performing the inspections discussed in this report, the team reviewed the applicable portions of the Brunswick UFSAR that related to the areas inspected.

During the review of the licensee's scoping of SSCs, the team identified an inaccurate statement associated with the 24/48 VDC system in Section 8.3.2.2 of the UFSAR. That section stated that the 24/48 VDC System provided electrical power to non-safety systems. However, the team noted that the 24/48 VDC system also provided power to safety-related flow indicating controllers in the containment atmospheric control (CAC) system. This UFSAR statement did not agree with the statement of system purpose contained in OSD-51, Section 1.1, System Description of 24/48 VDC System, which stated that the 24/48 VDC system was to provide power for safety-related (i.e., CAC flow indicating controllers) and non-safety systems. The licensee had previously evaluated this issue and determined that the CAC flow controllers would perform their safety-related function without being supplied electrical power but the inaccurate wording of the UFSAR had been overlooked by the licensee. The licensee's evaluation of this issue had been previously documented in Engineering Evaluation Report (EER) 94-0217, "Down Grade 24/48 VDC System to Quality Class B". The licensee informed the team that the UFSAR wording would be revised as part of the corrective actions associated with CR 98-00648 which documented the discrepancy between the UFSAR and OSD-51. The team concluded that this oversight had no safety significance and that the licensee had addressed the team's concern.

The team verified that the UFSAR wording for other areas reviewed by the team was consistent with the observed plant practices, procedures and parameters.

E4 Engineering Staff Knowledge and Performance

E4.1 Engineering Knowledge of the Maintenance Rule

a. Inspection Scope (62706)

The team interviewed licensee system engineers for the SSCs reviewed in paragraphs M1.6 and M1.7 to assess their understanding of the Maintenance Rule and associated responsibilities.

b. Observations and Findings

System engineers were very knowledgeable of their systems and proactive in corrective actions. Additionally, they had a good understanding of requirements of the Maintenance Rule and how to apply the Rule to their systems. Most system engineers interviewed had been assigned to their respective system for many years. The team considered the effective integration of assigned systems engineers in the process for implementation of the Rule as a major contributing factor to the program effectiveness noted during this inspection.

c. Conclusions

System engineers were very knowledgeable of their systems, were proactive in corrective actions, and had a good understanding of the Maintenance Rule requirements and how to apply the Rule to their systems. This area was considered a strength.

V. MANAGEMENT MEETINGS

X1 Exit Meeting Summary

The team leader discussed the progress of the inspection with licensee representatives on a daily basis and presented the results to members of licensee management and staff at the conclusion of the inspection on March 20, 1998. The licensee acknowledged the findings presented.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

B. Aukland, Supervisor Engineering Support
W. Dorman, Supervisor Licensing and Regulatory Programs

N. Gannon, Manager Maintenance
J. Gawron, Manager Nuclear Assessment Section
S. Hinnant, Vice President, Brunswick Steam Electric Plant
K. Jury, Manager Regulatory Affairs
B. Lindgren, Manager Site Support Services
J. Lyash, Plant General Manager
G. Miller, Manager Brunswick Engineering Support Section
R. Mullis, Manager Operations
K. Nicely, Regulatory Affairs

NRC

J. Jaudon, Division Director, Division of Reactor Safety, RII
P. Fredrickson, Branch Chief, Maintenance Branch, DRS, RII
C. Patterson, Senior Resident Inspector

LIST OF INSPECTION PROCEDURES USED

IP 62706	Maintenance Rule
IP 62002	Inspection of Structures, Passive Components, and Civil Engineering Features a Nuclear Power Plants

PARTIAL LIST OF DOCUMENTS REVIEWED

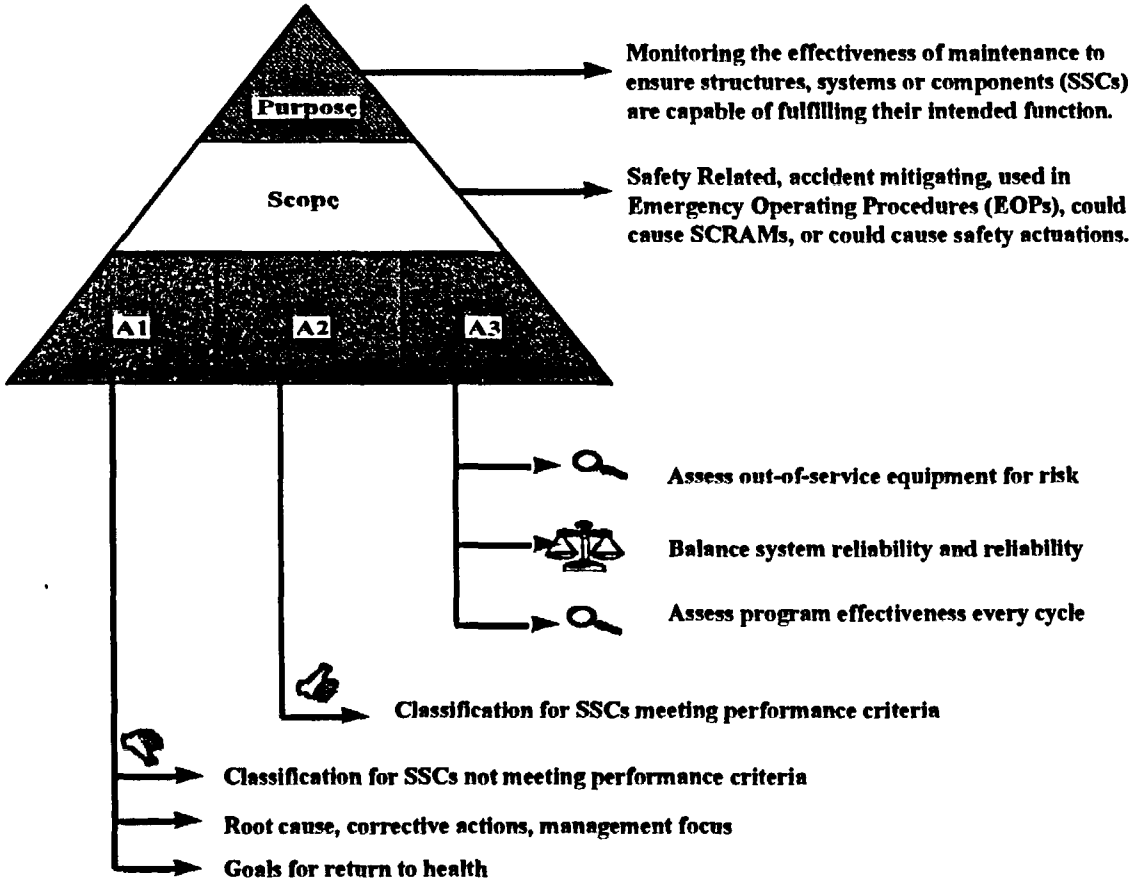
NUMARC 93-01, Revision 2, "Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants."
ADM-NGGC-0101 Revision 9, "Maintenance Rule Program".
EGR-NGGC-0351 Revision 5, "Condition Monitoring of Structures".
OAP-025, Revision 4, "BNP Integrated Scheduling", dated February 27, 1998
Maintenance Rule System Scoping Summary, dated February 25, 1998.
EER 93-071, "Evaluation of 24/48 VDC System Compliance to IEEE 308-71 Performance Testing".
EER 94-0217, "Down Grade 24/48 VDC System to Quality Class B".
OSD-51, System Description of 24/48 VDC System.
"Identification of High Safety Significant Systems within Maintenance Rule Scope", dated March 6, 1998.
" PSA Evaluation of Maintenance Rule Performance Criteria", transmitted by memo NF-98A-0045, dated February 18, 1998.

ATTACHMEN

NRC Maintenance Rule Baseline Inspection
March 16, 1998

"Safe, Reliable, Economic, Environmentally Sound Operation"

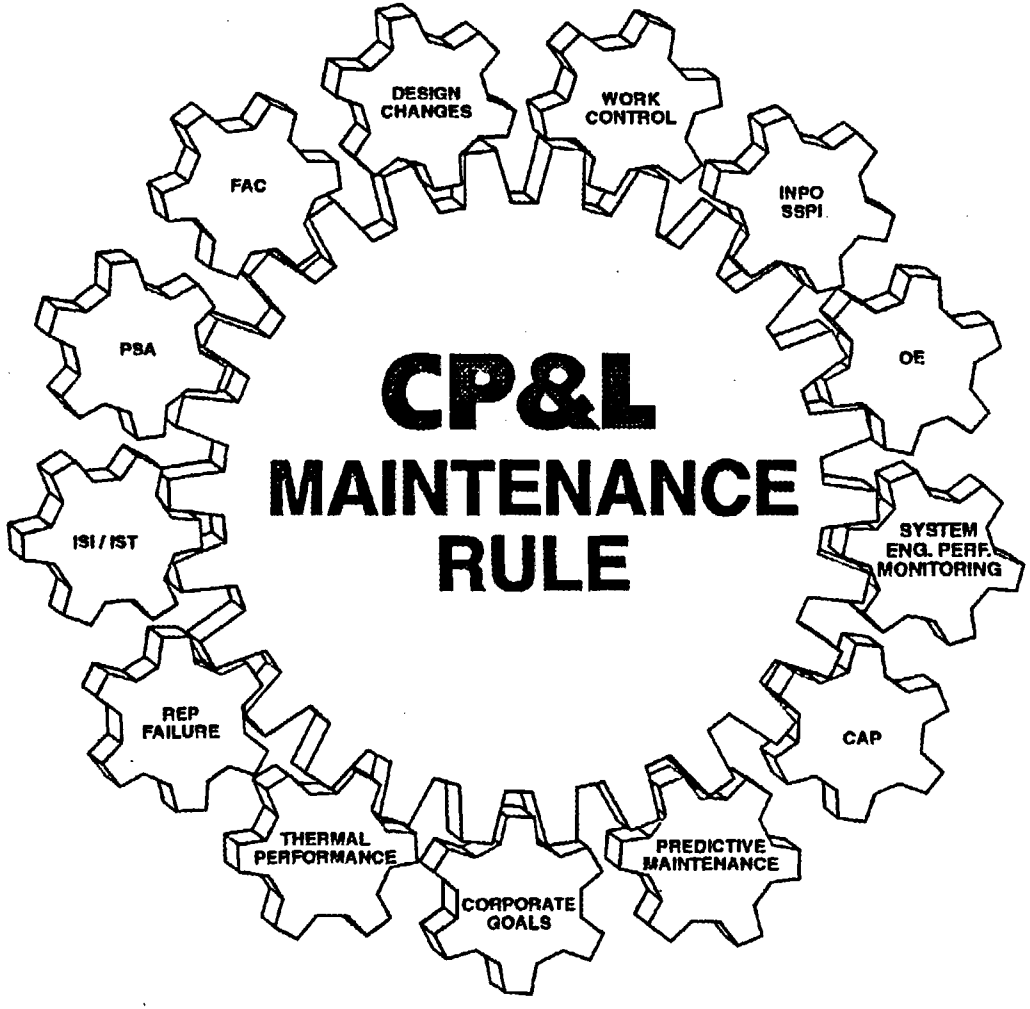
10CFR50.65, The Maintenance Rule



CP&L

Introduction

Attributes of an Effective Program



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Agenda

- Program Evolution
- Organization
- Scoping/Monitoring
- Safety Assessment
- Periodic Assessment
- Summary

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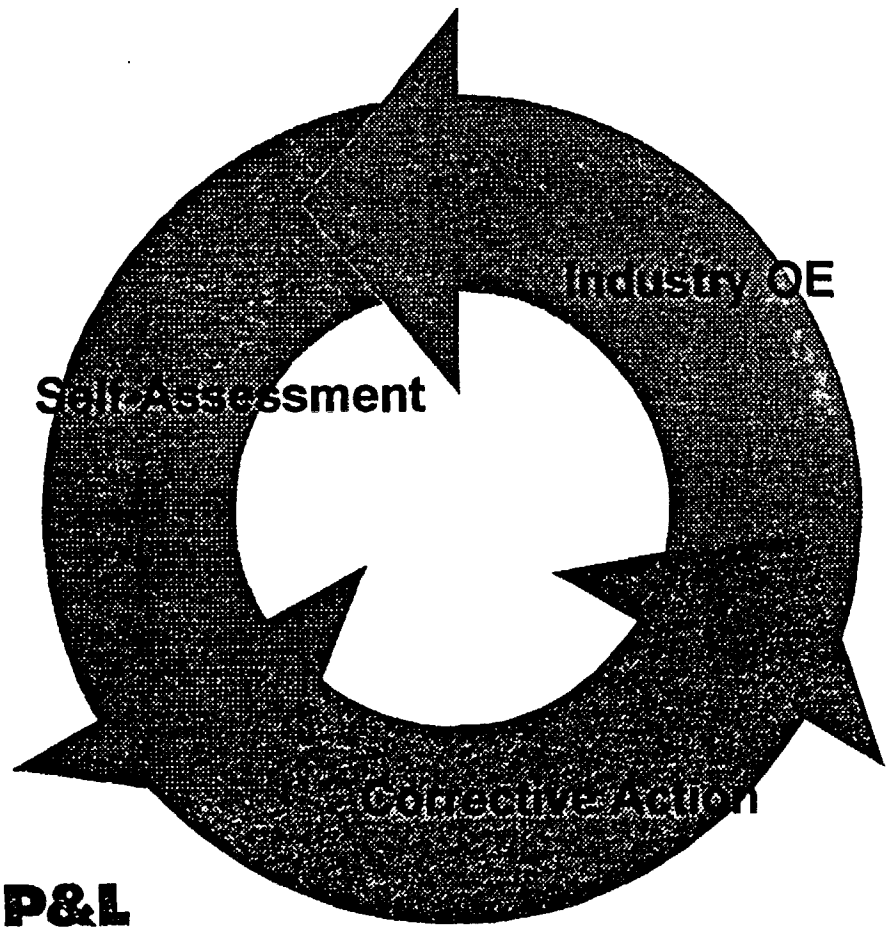
Program Evolution - *"Continuous Improvement"*



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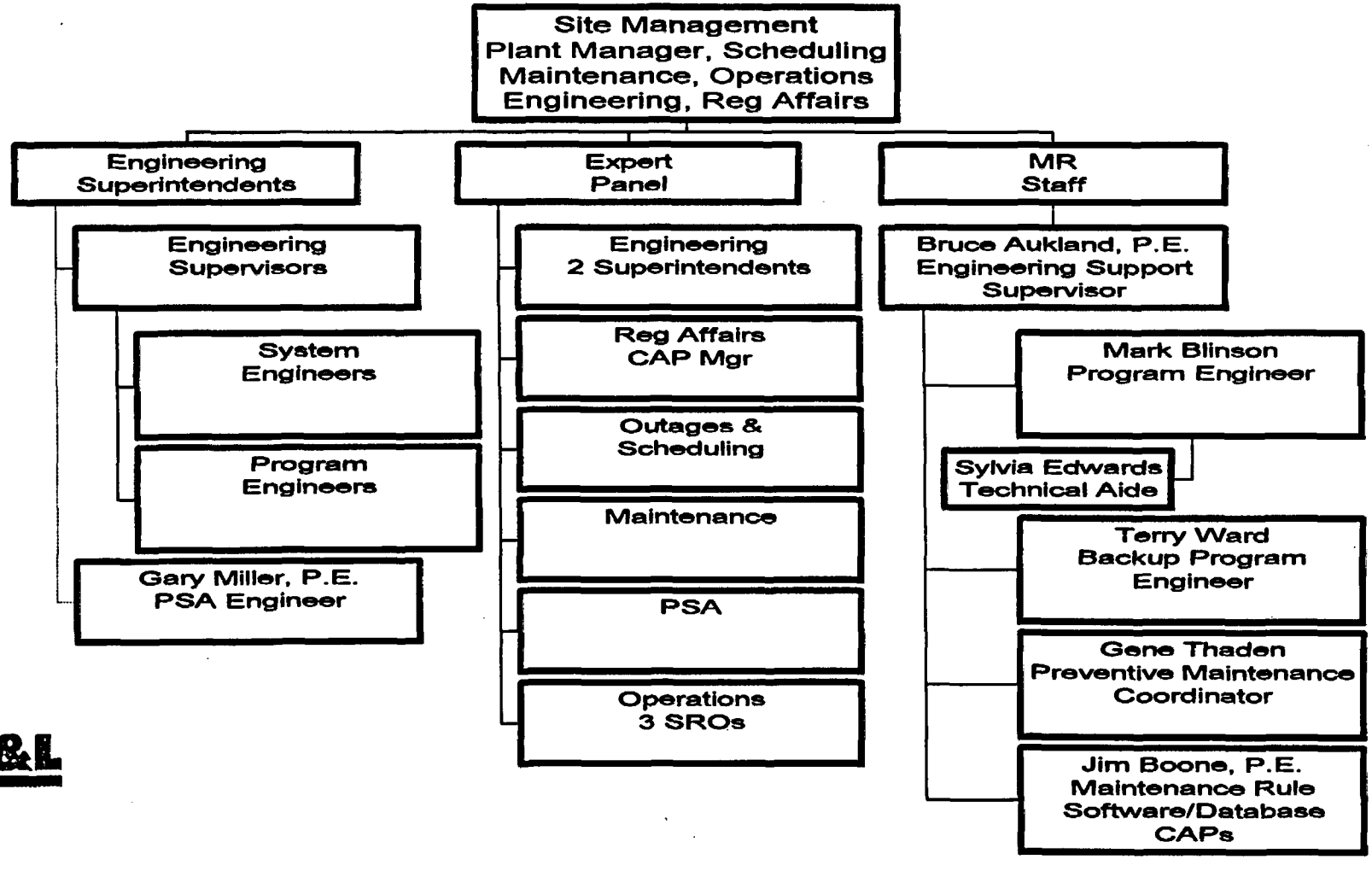
- Creation 94-96
- Implemented 7/96
- Baseline feedback Fall 96, Spring 97
- Self Assessment April 97
- Program upgrade, May 97-Jan. 98
- Periodic Assessment Jan. 98
- Followup-October 98

Key Organization Personnel



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Scoping/Monitoring

Scoping Attributes

- Scoped at Function level
- EOP Matrix
- High Safety Significant Considerations
  - PSA
  - Fission Product Barriers
  - IPEEE Results
  - Shutdown Risk

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Scoping/Monitoring

Monitoring

- **Train/division level monitoring**
  - ***Prevent Masking***
- **Condition Monitoring**
  - ***Predictive in nature***
- **Plant Level Criteria**
  - ***Monitoring every***
  - ***BNP SSC***

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Scoping/Monitoring

Pseudo Systems

"Integration and Focus"

- **Containment Isolation Valves**
- **ECCS Suction Strainers**
- **Plant Roofs**
- **Rx Coolant Pressure Boundary**
- **Alternate Safe Shutdown**

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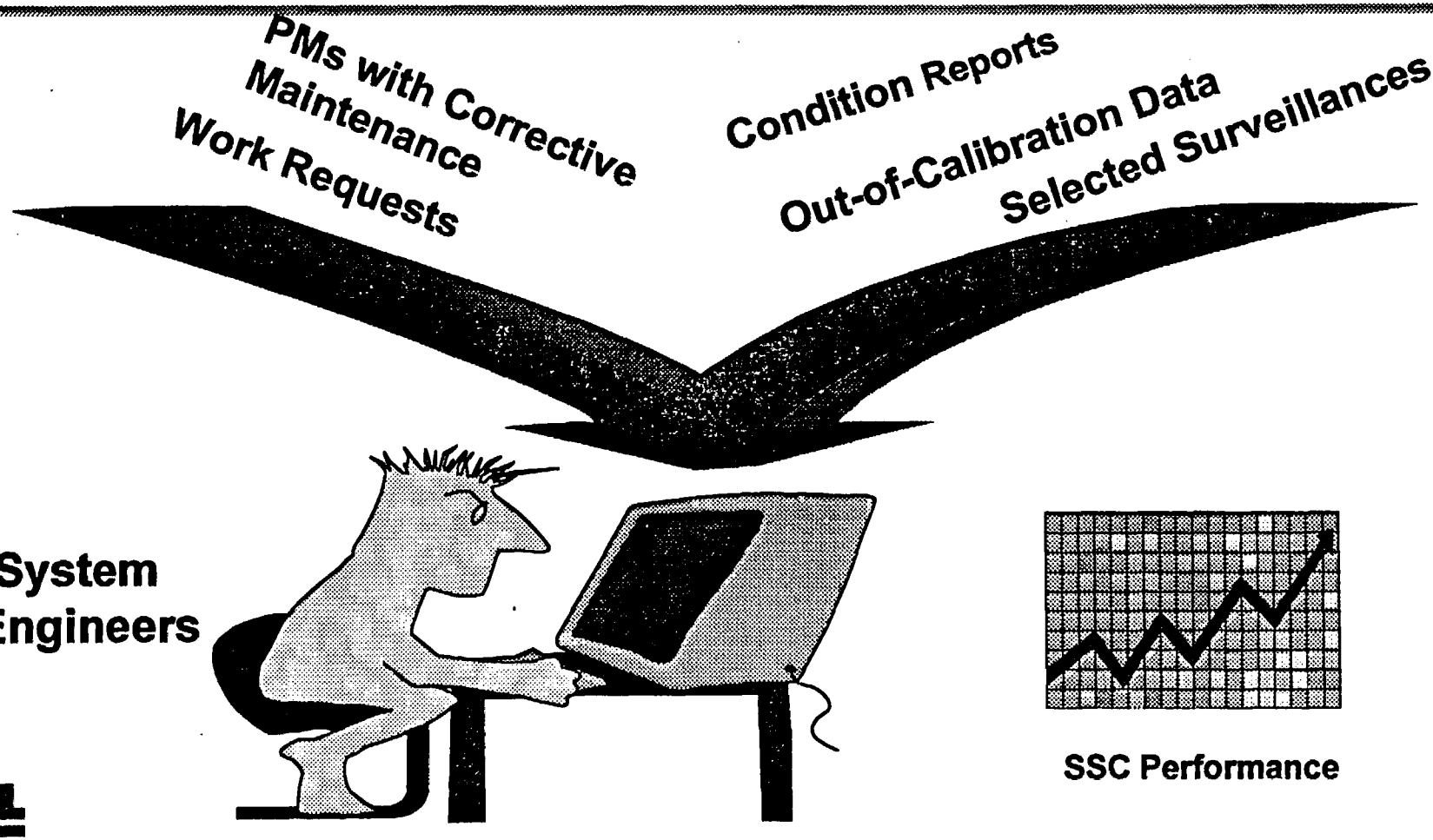
Scoping/Monitoring
Functional Failure Monitoring



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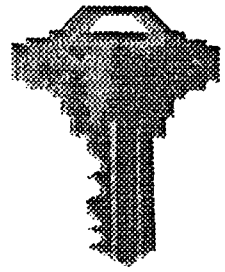
Scoping/Monitoring

a(1) SSCs



- Condition Report for each a(1) SSC
- Weekly site management review of corrective actions, goals
- a(1) goal integrated with effectiveness review of Condition Report
- a(1) report available sitewide on LAN

Safety Assessment
Defense in Depth

AP-25, BNP Integrated Scheduling
AP-22, BNP Outage Risk Management

EOOS - on line
ORAM - off-line

Operator knowledge and experience

On-site PSA Support

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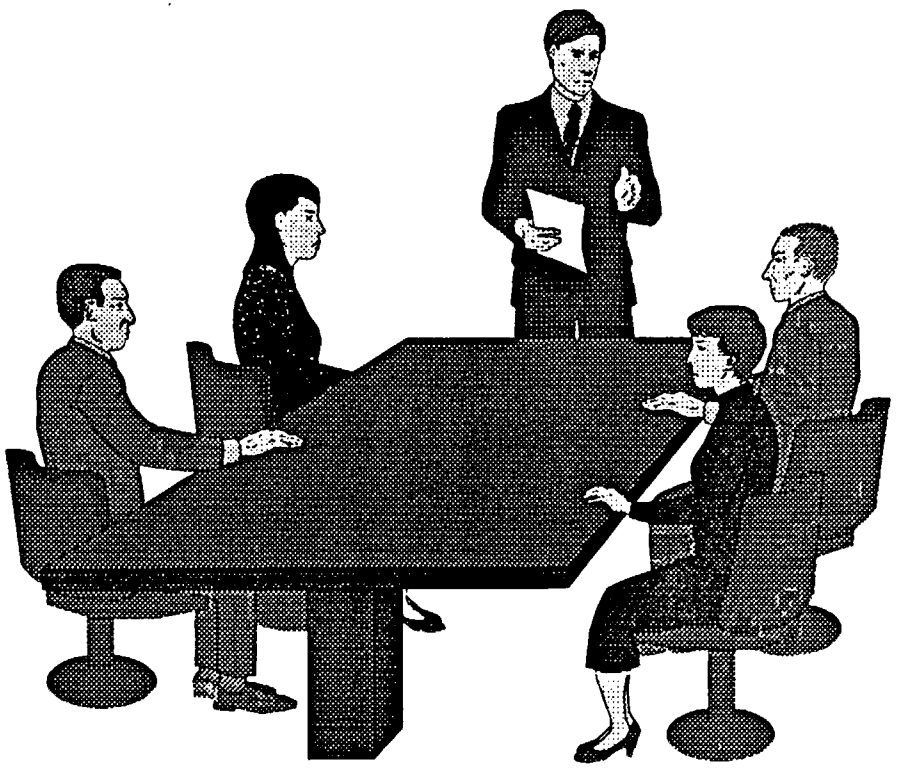
Periodic Assessment

"Thorough and Critical"

Diversity of Assessors:

- Hatch, Salem, Hope Creek
- Harris, Robinson
- Corporate Chiefs Group
- Nuclear Assessment
- Industry Consultant
- Expert Panel
- System Engineers

CP&L Peer Group Synergy!



- Common procedure
  - Maintenance Rule
  - Structural Monitoring
- Common software
- Frequent communication
- Participation during self assessments, NRC inspections
- Corporate Leadership

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Summary

- **Strong Line Ownership of the MR program**
- **In-Depth Level of knowledge**
- **Full integration of the MR with other site programs**
- **Aggressive pursuit of excellence in MR implementation**
- ***A vital tool in continuously improving Plant Equipment Performance***

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