ENCLOSURE 2

U.S. NUCLEAR REGULATORY COMMISSION
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Attachment:	Supplemental Information

EXECUTIVE SUMMARY

Washington Nuclear Project-2
NRC Inspection Report 50-397/96-18

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]. This report covers a 1-week onsite period of inspection and in-office followup review by inspectors from the Office of Nuclear Reactor Regulation and Region IV.

Operations

- Those operations personnel interviewed displayed a limited knowledge and understanding of the Maintenance Rule and the licensee's program. However, their knowledge and understanding were adequate to meet the operation's organization responsibility for Maintenance Rule Program implementation (Section O4.1).

Maintenance

- The scoping effort was conservative and thorough, and resulted in the proper identification of those structures, systems, and components and their related functions that were required to be within the scope of the Maintenance Rule in accordance with 10 CFR 50.65(b) (Section M1.1).

- The failure to monitor the unavailability of three risk-significant systems was identified as a violation (Section M1.2).

- The licensee was not able to demonstrate that their use of a standard performance criterion for reliability did not have an adverse affect on the risk ranking used to establish structure, system, and component safety significance, and this was identified as a violation (Section M1.2).

- The proceduralized guidance for performing the required periodic evaluation of condition monitoring activities and associated goals and preventive maintenance activities was inadequate. This was identified as a weakness (Section M1.3).

- The proposed method of balancing reliability and unavailability, using maintenance preventable functional failures alone as the measure of reliability, would not have met the intent of the Maintenance Rule. However, since the determination of balance was not required to be performed until the first periodic evaluation, the significance of this inadequacy was best characterized as a weakness (Section M1.4).

- Significant procedural weaknesses regarding the assessment of the safety impact of removing structures, systems, and components from service for monitoring and preventive maintenance were identified. The lack of detail in Administrative

Procedure 1.16.6B, "Voluntary Entry into Technical Specification Action Statements to Perform Work Activities During Power Operations," Revision 6, amounted to process weaknesses on the assessment of risk resulting from random equipment failures and the assessment of removing nonrisk-significant structures, systems, and components from service (Section M1.5).

- The inability to identify some maintenance preventable functional failures was identified as a programmatic weakness (Section M1.6).
- For those systems that were inspected, material condition was good (Section M2).

Engineering

- The probabilistic risk assessment's level of detail, truncation limits, and quality were adequate to perform the risk categorization for the Maintenance Rule (Section M1.2).
- The inability of some system engineers to identify maintenance preventable functional failures was identified as a weakness (Section E4.1).
- Although some individual performance weaknesses were identified in how system engineers could meet their Maintenance Rule responsibilities, their overall performance was adequate. Performance of these personnel was good when the limited training and occasional lack of guidance was considered. All exhibited an excellent knowledge of their systems' condition (Section E4.1).

Report Details

Summary of Plant Status

The plant was operating at full power during the inspection.

I. Operations

O4 Operator Knowledge and Performance

O4.1 Operator Knowledge of the Maintenance Rule

a. Inspection Scope (62706)

During the inspection, the team interviewed licensed plant operators to determine if they understood the general requirements of the Maintenance Rule and their particular duties and responsibilities for its implementation. The team asked a sample of operators to explain the general requirements of the Maintenance Rule and to describe their responsibilities for implementing these requirements.

b. Observations and Findings

The operations personnel interviewed appeared to be aware of program requirements. Operators were knowledgeable of what their specific responsibilities were concerning removing and logging equipment out-of-service. However, those personnel interviewed displayed a limited understanding of the Maintenance Rule. Operators were not fully aware of what equipment was within the scope of the Maintenance Rule. Their understanding of probabilistic risk assessment was more limited. Operators were not familiar with the requirements of (a)(3) of the Maintenance Rule regarding the assessment of the total plant equipment out-of-service time and its overall effect on performance of safety functions.

c. Conclusions

Those operations personnel interviewed displayed a limited knowledge and understanding of the Maintenance Rule and the licensee program. However, their knowledge and understanding was adequate to meet the operation's organization responsibility for Maintenance Rule Program implementation.

II. Maintenance

M1 Conduct of Maintenance (62706)

M1.1 Scope of the System, Structure, and Component Functions Included Within the Maintenance Rule

a. Inspection Scope (62706)

The team reviewed the WNP-2 scoping effort to determine if the appropriate structures, systems, and components were included within the Maintenance Rule Program in accordance with 10 CFR 50.65(b). The team independently reviewed selected portions of the WNP-2 Updated Final Safety Analysis Report and emergency operating procedures and identified several structures, systems, and components which appeared to meet one or more of the 10 CFR 50.65(b) scoping criteria for discussion with the licensee.

b. Observations and Findings

The licensee's scoping process was delineated in Section 1.0 of Technical Services Instruction TI 4.22 "Maintenance Rule Program," Revision 0. The scoping results were documented in the "WNP-2 Maintenance Rule Program Systems Scoping" matrix, Revision 3. The scoping matrix was broken down by system designation, with further breakdown to significant functions within each system. The scoping decisions were made at the function level within the system by evaluating the system function against the five criteria specified in Section 8.2.1 of NUMARC 93-01, "Industry Guidelines for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," Revision 0. This approach, in some cases, confused licensee personnel as to which structures, systems, and components and/or functions were considered in scope and resulted in several specific questions from the team.

In accordance with Technical Services Instruction TI 4.22, the engineering programs group prepared the scoping matrix and presented it to the expert panel for review and approval as the basis for final determination. The team noted that the documentation of the technical bases for some scoping decisions were not always sufficiently detailed, but after discussions with members of the licensee's staff, the team concluded that the justifications were acceptable.

c. Conclusions

The team concluded that the licensee's scoping effort was conservative and thorough, and had resulted in the proper identification of those structures, systems, and components and their related functions that were required to be within the scope of the Maintenance Rule in accordance with 10 CFR 50.65(b).

M1.2 Safety or Risk Determination

a. Inspection Scope (62706)

Paragraph (a)(1) of the Maintenance Rule required that goals be commensurate with safety. Additionally, implementation of the Maintenance Rule using the guidance contained in NUMARC 93-01 required 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 the structure, system, or component functions should be monitored at the train or plant level. The team reviewed the methods and calculations that the probability safety analysis group had established for making these required safety determinations. The team also evaluated the safety determinations that were made for the functions that were reviewed in detail during this inspection.

b. Observations and Findings

The team found that the final risk-significance ranking was based on a combination of results from a probabilistic risk assessment and expert panel judgement based on deterministic considerations. The licensee's program used quantitative measures of Fussell-Vesely importance, risk-reduction importance, risk-reduction worth, risk-achievement worth, and core damage frequency contribution. The risk value was based on core damage frequency (Level 1 analysis).

The expert panel removed four structures, systems, or components from the list of functions which had met at least one of the quantitative criteria. The circulating water, diesel generator building environmental control, radwaste building environmental control, and power conversion systems had originally met the quantitative criteria for risk significance. However, the expert panel had determined that conservative probabilistic risk assessment modeling assumptions resulted in these structures, systems, or components meeting the quantitative criteria for risk significance. Based on this reasoning, the expert panel determined that these systems would be placed in the nonrisk-significant category. The team determined the expert panel had reasoned correctly.

The expert panel added two structure, system, or component functions to the risk-significant list to accommodate probabilistic risk assessment modeling limitations. The depressurization system and reactor building structure were added to the risk-significant category for the high consequences (i.e., significant offsite releases) of their failures.

At the time of the inspection, the expert panel had declared 86 of 142 structures, systems, or components to be risk significant functions within the scope of the Maintenance Rule. Systems were classified as risk significant if the system included a component that was necessary to support a risk-significant function. Within those structure, system, and component functions that the expert panel had determined to be in the scope of the Maintenance Rule, the team did not identify any structures, systems, or components that had been inappropriately ranked.

b.1 Risk-Ranking Methodology

The team reviewed a sample of structures, systems, and components covered by the Maintenance Rule that the expert panel had categorized as nonrisk significant to assess if the expert panel had adequately established the safety significance of those structures, systems, and components. All of the sampled structures, systems, and components were modeled in the probabilistic risk assessment. The team found that the function modeling in the probabilistic risk assessment for those sampled structures, systems, and components was sufficiently detailed. Plant-specific data was used when statistically sufficient data was available. Otherwise, generic failure data, based on most recent industry information, were used. No Bayesian updating was used. Success criteria for the selected structures, systems, and components were based on thermal-hydraulic analyses. The team determined that the expert panel had included the consideration of initiating events in the ranking process. Initiating event frequencies were updated based on plant-specific event data. The team did not identify any particular event initiators which were inadequately dispositioned by the expert panel.

The team also reviewed the truncation limits used during the risk-ranking process. Truncation limits are imposed on probabilistic risk assessment models in order to limit the size and complexity of probabilistic risk assessment results to a manageable level. The probability safety analysis group used a truncation level of 1E-9 when quantifying the probabilistic risk assessment model. This was four orders of magnitude less than the overall core damage frequency estimate of 1.37E-5/yr. The team judged that the truncation limit of 1E-9 used for the risk-ranking process was acceptable. The probability safety analysis group performed sensitivity analyses to demonstrate the effects of truncation levels on the changes in importance rankings of structures, systems, and components. Sensitivity analysis results at a truncation limit of 1E-10 indicated that there were some minor changes in the ranking order of highly reliable structures, systems, and components. However, there were no misclassifications of the highly reliable structures, systems, and components that were affected by the higher truncation limit.

Based on the review of the sampled structures, systems, and components, the probabilistic risk assessment's level of detail, truncation limits, and quality were adequate to perform the risk ranking required for the Maintenance Rule.

b.2 Performance Criteria

The team reviewed the licensee-established performance criteria to determine if the licensee had adequately set performance criteria in accordance with (a)(2) of the Maintenance Rule and consistent with the assumptions used to establish the safety significance. Section 9.3.2 recommends that risk-significant performance criteria be set to assure that the availability and reliability assumptions used in the risk-determining analysis are maintained. The expert panel elected to use performance criteria different than what was used in the risk determination for several risk-significant structures, systems, and components. Actual plant-specific values for unavailability and actual plant-specific or generic values for reliability were used in the licensee probabilistic risk assessment. The expert panel selected a performance criterion varying from about 0.1 to 10.0 percent unavailability for most risk-significant structures, systems, and components. A performance criterion of three random failures and one repeat maintenance preventable functional failures per 14,000 critical hours (two consecutive fuel cycles) was selected for the reliability of all risk-significant structures, systems, and components.

The team noted that the licensee's program did not monitor the unavailability of nuclear condensate, reactor feedwater, and uninterruptible alternating current power, all of which were designated as risk significant. The maintenance Rule requires that the balance between reliability and availability be evaluated for risk-significant structures, systems, and components. The licensee could not explain why unavailability was not monitored and tracked for these systems, and how the balance evaluation would be performed. The team also found that unavailability criteria were greater than the unavailability assumptions used in the probabilistic risk assessment for the residual heat removal and standby service water systems, which were risk-significant standby systems. The team noted that these differences for the two systems did not significantly affect the rankings. However, the cumulative effects of many such differences on the ranking process were not evaluated. The expert panel did not have a mechanism to link performance criteria into the ranking process to ensure ranking results would not be affected by performance criteria which were different from the probabilistic risk assessment assumptions for unavailability. The team determined that failure to incorporate the effects of unavailability assumptions in the risk-ranking process decreased the effectiveness of the overall risk-ranking methodology. Also, the failure to monitor the unavailability of functions associated with condensate, reactor feedwater, and uninterruptible alternating current power was a violation of 10 CFR 50.65(a)(2) (50-397/9618-01).

The inspectors reviewed additional information submitted by the licensee on January 2, 1997, related to the violation. This information provided the licensee's plan to address the potential violation for the three risk-significant systems identified by the inspectors.

The probability safety analysis group also did not perform analyses that demonstrated the performance criteria used for reliability preserved the assumptions used in the probabilistic risk assessment or other plant-specific risk-determining analysis. The probability safety assessment group did not demonstrate that the use of the criterion did not have an adverse impact on risk ranking. The team noted that there was no relationship established between the criterion and the failure probability assumptions in the probabilistic risk assessment, or other plant-specific risk-determining analyses, since the number of functional demands were not tracked. The team noted that maintenance preventable functional failure criterion for risk-significant operating and standby systems were identical. Thus, widely different actual reliability estimates (probability of failure upon demand) could result from the same number of maintenance preventable functional failures in a given time period if the number of demands was different.

This method of measuring and tracking functional reliability was inadequate and represented a failure to set performance criteria that were commensurate with safety. This was identified as a violation of 10 CFR 50.65(a)(2) (50-397/9618-02).

In the previously mentioned additional information submitted on January 2, 1997, the licensee stated an intention to identify a method of measuring reliability that would be fully acceptable to applicable industry groups and the NRC.

b.3 Expert Panel Observations

The expert panel membership included representatives from operations, maintenance, systems engineering, design engineering, and the probability safety analysis group. The expert panel possessed a total of greater than 100 years of nuclear power experience. In addition to determining which structures, systems, and components were within the scope of the Maintenance Rule, the expert panel had established the risk-significance ranking, performance criteria, and goals of structures, systems, and components. The panel had also established the lists of (a)(1) and (a)(2) structures, systems, and components. The expert panel was established in accordance with Section 9.3.1 of NUMARC 93-01, Revision 0, which recommended the use of an expert panel to establish risk significance of structures, systems, and components within the scope of the Maintenance Rule by combining probabilistic risk assessment insights with operations and maintenance experience, and to compensate for the limitations of probabilistic risk assessment modeling and importance measures.

The final risk-significance ranking was based on a combination of results from the probabilistic risk assessment (WNP-2 Individual Plant Evaluation, Revision 1) and expert panel judgement based on deterministic considerations. The importance measures used for risk ranking were Fussell-Vesely importance, risk-reduction importance, risk-reduction worth, risk-achievement worth, and 90 percent core damage frequency cutset contribution. The team noted that the accident sequence frequencies for dominant sequences in the probabilistic risk assessment model were uniformly distributed. Thus, the use of 90 percent core damage frequency cutset contribution as an importance measure would result in more structures, systems, and components being ranked as risk significant. The team questioned the expert panel members on their knowledge and understanding of the limitations of probabilistic risk assessment modeling and use of importance measures. The responses from the expert panel members indicated there was not a strong knowledge in this area by all members. The expert panel members indicated that their conclusions on importance were based on their engineering judgment and the risk-achievement worth measures. In addition to using probabilistic risk assessment importance measures, the expert panel considered the impact on shutdown risk and offsite releases to determine the risk significance of structures, systems, and components. An average value of 1.6 (on a scale of 3.0) from the expert panel voting was used as the cutoff for identifying structures, systems, and components as risk significant. However, there was no technical basis for this cutoff value.

c. Conclusions

The probabilistic risk assessment's level of detail, truncation limits, and quality were adequate to perform the risk categorization for the Maintenance Rule. The expert panel's use of performance criterion for unavailability of two standby systems, although different from what was assumed in the probabilistic risk assessment, or other plant-specific risk-determining analyses, did not adversely affect the risk ranking used to establish safety significance. The failure to monitor the unavailability of three risk-significant systems was identified as a violation. Additionally, the probability safety assessment group was not able to demonstrate that the use of a standard performance criteria for reliability did not have an adverse affect on the risk ranking used to establish structure, system, and component safety significance. This was identified as a violation. The team concluded that the expert panel methodology for risk-significance assessment and ranking was adequate.

M1.3 Periodic Evaluation

a. Inspection Scope (62706)

Paragraph (a)(3) of the Maintenance Rule requires 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 is required to be performed at least one time during each refueling cycle, not to exceed 24 months between evaluations. The team reviewed the plans and procedures established to ensure this evaluation would be completed as required. The team also discussed these plans with the licensee's Maintenance Rule coordinator who was responsible for performing this evaluation.

b. Observations and Findings

The Maintenance Rule coordinator had not performed an evaluation since the Maintenance Rule had only become effective on July 10, 1996. The team then reviewed the process for performing the periodic evaluation. This guidance was contained in Procedure TI 4.22, Section 6. The team identified a lack of detail within the guidance. The degree of detail observed was that the NUMARC 93-01 guidance was only partially restated without providing details for the performance of the evaluation.

c. Conclusions for Periodic Evaluation

The proceduralized guidance for performing the required periodic evaluation was inadequate at the time of the inspection. This was identified to the licensee as a weakness.

M1.4 Balancing Reliability and Unavailability

a. Inspection Scope (62706)

Paragraph (a)(3) of the Maintenance Rule requires that adjustments be made, where necessary, to assure that the objective of preventing failures through the performance of preventive maintenance is appropriately balanced against the objective of minimizing unavailability due to monitoring or preventive maintenance. The team reviewed the plans and procedures the licensee had established to ensure these objectives were addressed adequately as required by the Maintenance Rule. The team also discussed these plans with the engineering programs supervisor, who was responsible for performing this evaluation.

b. Observations and Findings

The team reviewed the process for balancing structure, system, or component reliability and unavailability. An unavailability criteria based on an administrative limit of 80 percent of allowable out-of-service time for the structures, systems, and components was established at the system level. The balancing consisted of monitoring structure, system, or component performance against the established structure, system, or component performance criteria. The process considered a function balanced if the performance criteria were met. As stated above, the established performance criteria varied from about 0.1 to 10.0 percent unavailability and reliability of three random failures and one repetitive maintenance preventable functional failures per two consecutive operating cycles for risk-significant structures, systems, and components. In the case of nonrisk-significant structures, systems, and components, the performance criterion for reliability was five random failures and one repeat maintenance preventable functional failure per two consecutive operating cycles.

The team determined that use of maintenance preventable functional failures did not give sufficient information about structure, system, or component reliability. Meaningful estimates of reliability would necessitate information that considered the structure, system, or component demands and time in service. This was identified to the licensee as a weakness.

In the additional information submitted by the licensee on January 2, 1997, the licensee stated an intent to revise two procedures to provide improved guidance for assessing the impact of the balance between availability and reliability.

c. Conclusions for Balancing Reliability and Unavailability

The team concluded that the proposed method of balancing reliability and unavailability using maintenance preventable functional failures alone as the measure of reliability would not meet the intent of the Maintenance Rule. However, the determination of balance was not required to be performed until the first periodic evaluation. The team identified this inadequate method as a weakness. However, the licensee submitted additional information with a preliminary plan for addressing this issue.

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 of maintenance activities on plant safety should be taken into account before taking equipment out-of-service for monitoring or preventive maintenance. The team reviewed the procedures and discussed the process with the Maintenance Rule coordinator, the reliability engineer performing probabilistic risk assessments, expert panel members, plant operators, system schedulers, and work-week supervisors.

b. Observations and Findings

The licensee incorporated the requirements to assess the impact on plant safety when removing equipment from service into Administrative Procedure 1.16.6B, "Voluntary Entry into Technical Specification Action Statements to Perform Work Activities During Power Operations," Revision 6. This procedure required the production scheduling shift manager to request a probabilistic safety assessment to evaluate impact on plant safety prior to any voluntary entry into Technical Specification conditions for corrective maintenance. The procedure also contained a list of risk-significant systems for the purpose of alerting the operations and maintenance planning staff to the high-risk impact of performing maintenance on these systems. The team noted that the list was not comprehensive in that all of the Maintenance Rule risk-significant systems had not been included in this list, i.e., the low pressure core spray system.

The team identified that the procedure was silent regarding the necessity of performing a risk assessment following the discovery of a failed structure, system, or component, or due to emergent work. In addition, Procedure 1.16.6B did not contain guidance for assessing risk when removing low-risk structures, systems, and components from service. Combinations of low-risk structures, systems, and components removed from service concurrently could potentially place the plant in a higher than acceptable risk-significant configuration. The team concluded that the lack of procedural guidance for assessing the risk impact of equipment out-of-service represented a weakness in the Maintenance Rule Program.

The team attended a work-week planning meeting to observe the assessments associated with the maintenance work activities which had been scheduled in the 12-week rolling maintenance schedule. Probabilistic safety assessment evaluations on the frozen work schedule were provided to the work-week supervisor for decision changes on the work schedule if high-risk configurations were encountered. There was no clear procedural guidance regarding the responsibility for performing risk assessment after the work-week schedule was frozen or when emergent work was identified. The Maintenance Rule coordinator stated that the probabilistic safety assessment group would be requested to evaluate the risk impact of any emergent work identified during the daily operations morning meeting if a potential high-risk configuration was encountered. The team noted that the proposed method for risk assessment of on-line maintenance activities was to use the Sentinel Computer Code, Version 1.01. Also, the Outage Risk Assessment Management (ORAM) Code, Version 2.1, was used to evaluate the risk of plant configurations during shutdown and refueling outages. Although the team did not specifically review the Sentinel and ORAM models, the approach appeared to be consistent with that used successfully at other nuclear plant sites.

As noted previously, 10 CFR 50.65 (a)(3) required that an assessment of the total plant equipment that was out-of-service be taken into account to determine the overall effect on performance of safety functions during the performance of monitoring and preventive maintenance activities. The team reviewed the control room operator's logs, limiting conditions for operation/inoperable equipment logs, and Technical Specification surveillance logs over a 2-month period to identify risk-significant "time windows" in which several structures, systems, and components were concurrently out-of-service. The review period was from August 1 through September 30, 1996. The team selected two time windows on August 7 and September 3, 1996, where four or more structures, systems, and components were out-of-service concurrently. The probability safety analysis group performed risk calculations of the identified equipment outage configurations to demonstrate the change in risk. The equipment outage configuration on August 7, 1996, involving Technical Specification-required surveillances on the 4.16 kV essential bus, reactor core isolation cooling, and residual heat removal systems resulted in a temporary increase of core damage frequency value to 4.2E-3/yr. However, the conditional core damage probability was 2.4E-7 because of the short duration (30 minutes) of the outage configuration. The team determined that there was no unacceptable risk due to changed configurations during the sampled time period. However, there was no procedural guidance to perform the risk assessments for all equipment taken out-of-service. The team concluded that there was a weakness in the Maintenance Rule Program, in that there was no systematic process to perform specific risk assessments for unanalyzed configurations.

On January 2, 1997, the licensee submitted additional information expressing an intent to improve procedural guidance used to meet the requirements of 10 CFR 50.65(a)(3). The overall plan involved making integrated revisions to a group of procedures that addressed scheduling and work control. Also probabilistic safety assessment engineers were to be assigned responsibility for analyzing and providing risk assessment for emerging work.

c. Conclusions for Safety Assessments

The team identified procedural weaknesses regarding the licensee's assessment of the safety impact of removing structures, systems, and components from service for monitoring and preventive maintenance. However, the inspectors did not identify any occurrence of a failure to perform a required assessment. Administrative Procedure 1.16.6B lack of detail was a process weaknesses for the assessment of risk resulting from random equipment failures and the assessment of removing nonrisk-significant structures, systems, and components from service. The team reviewed the additional information provided by the licensee and determined that the actions planned by the licensee should satisfactorily address the identified weakness in this area.

M1.6 Goal Setting and Monitoring and Preventive Maintenance

a. Inspection Scope (62706)

The team reviewed program documents and records in order to evaluate the process that had been established to set goals and monitor under paragraph (a)(1) and to verify that preventive maintenance was effective under paragraph (a)(2) of the Maintenance Rule. The team also discussed the program with the Maintenance Rule coordinator, system engineers, plant operators, and schedulers.

The team reviewed the systems described below to verify: that goals or performance criteria were established with safety taken into consideration; that industry-wide operating experience was considered where practical; that appropriate monitoring and trending was being performed; and, that corrective action was taken when a structure, system, and component function failed to meet its goal or performance criteria, or when a structure, system, and component function experienced a maintenance preventible functional failure.

b. Observations and Findings

b.1 Safety Consideration in Setting Goals and Performance Criteria

The Maintenance Rule as implemented using the guidance in NUMARC 93-01 requires that safety (risk) be taken into consideration when establishing goals under (a)(1) or performance criteria under (a)(2).

There were four structure, system, or component functions in the (a)(1) category. These were a mix of risk and nonrisk-significant functions. The run to failure or inherently reliable classifications for structure, system, or component functions were not used. Therefore, goals were established for all functions in (a)(1).

The expert panel used the risk-determination process described in Section M1.2, above, to assess the relative risk of all structure, system, and components within the scope of the Maintenance Rule. The results of this process were used to categorize structure, system, and component functions as either risk significant or nonrisk significant. System- or train-level performance criteria were established for all risk-significant structures, systems and components, and for those nonrisk-significant systems that were classified in standby service.

Plant-level performance criteria were established for all other in-scope structure, system, and component functions, i.e., nonrisk-significant, normally operating systems.

(1) Structures

The program for monitoring structures within the scope of the Maintenance Rule was contained in Procedure TI 4.23, "Maintenance Rule Structural Inspections," Revision 0. The process contained in this guidance provided for a baseline inspection of structures to identify anomalies and assure that the structures were functionally capable. There were defined performance criteria and provisions for placing structures in Category (a)(1) if the performance criteria were not met. The program documented the identification of a maintenance preventable functional failure during the performance of control room pressure testing surveillance.

The team determined that the program for monitoring the effectiveness of maintenance of in-scope structures was adequate.

(2) Reactor Feedwater System

The reactor feedwater system, and its associated functions, were designated as risk significant and normally operating. System performance was being monitored under Category (a)(2) using train-level reliability criteria based on maintenance preventable functional failures. The team reviewed a sample of work requests and problem evaluation reports and did not identify any maintenance preventible functional failures over the past two operating cycles.

The team found that the performance criteria were not adequate because the licensee failed to establish performance criteria for unavailability. This is an example of Violation 50-397/9618-01, which was discussed above.

(3) Low Pressure Core Spray System

The functions associated with the low pressure core spray system were classified risk significant and were being monitored under Category (a)(2) using system-level performance criteria of reliability and availability. The team noted that there had not been any maintenance preventable functional failures over the past two operating cycles. The system unavailability was due to scheduled surveillances and was well below the performance criteria.

The team found that the unavailability performance criterion was reasonable and commensurate with safety.

(4) Circulating Water System

The circulating water system was designated as a normally operating, nonrisk-significant system and was being monitored under Category (a)(2) using plant-level performance criteria. The plant-level criteria was based on unplanned reactor trips, unplanned safety system actuations, and unplanned loss-of-capacity. The team reviewed a sample of work requests and problem evaluation reports and did not identify any maintenance preventible functional failures over the past two operating cycles.

The team found that the performance criteria and monitoring were reasonable and were set commensurate with safety.

(5) Material Transport System

The material transport system was designated as a nonrisk-significant, condition-monitored system based on the function of the Reactor Building Crane MT-CRA-2. The crane was being monitored under Category (a)(1) because of repetitive maintenance preventable functional failures (failure to secure structural integrity latches after use). The licensee amended the applicable procedure, installed a placard in the crane storage area, and subsequently trained the crane operators to emphasize the importance of securing the latches after use. Since these failures occurred preparing for and during the R-11 Outage, the goal was set that no additional failures occur through the conclusion of the R-12 Outage.

The team found that the goal and corrective actions were reasonable and commensurate with safety.

(6) Residual Heat Removal System

Three safety-related functions, five safety-related interface functions, one augmented quality function, and one nonsafety-related function of the residual heat removal system were identified as being within the scope of the Maintenance Rule. All of these functions were monitored under Category (a)(2). The licensee monitored both maintenance preventable functional failures and unavailability. There were no maintenance preventable functional failures identified for this system.

The team found the unavailability performance criteria to be commensurate with safety.

(7) Reactor Water Recirculation Cooling System

The licensee's program identified five safety-related interface functions, one augmented quality function, and no safety-related functions of the reactor water recirculation system within the scope of the Maintenance Rule. All of these functions were monitored under Category (a)(2). The system engineer monitored maintenance preventable functional failures for this system; however, an unavailability was not monitored.

The licensee had determined that the function of this system was to provide sufficient recirculation flow to attain 100 percent rated core power. Therefore, a reduction in flow would result in a loss-of-capacity. The team noted that a digital adjustable speed control system for this system had been installed during the last outage (Spring 1996), but the test program had not been completed as of the end of this inspection. Even though problems with the adjustable speed drive system resulted in reduced capacity and two reactor shutdowns, no maintenance preventable functional failures were identified because the system was still in the test program.

The team found the program performance criteria for this system lacking in that unavailability and loss-of-capacity factor were not monitored.

(8) Direct Current Power and Uninterruptible Alternating Current Power Supplies

One safety-related function and one nonsafety-related function for the uninterruptible alternating current power systems were identified as being within the scope of the Maintenance Rule. Also, one safety-related and one nonsafety-related function for the direct current power system were identified within the scope of the Maintenance Rule. Both of these systems were monitored under Category (a)(2). Both maintenance preventable functional failures and unavailability for the direct current power system were monitored. However, only maintenance preventable functional failures were monitored for the uninterruptible alternating current power systems. There were no maintenance preventable functional failures identified for these systems.

The team determined that the unavailability performance criteria for the direct current power systems was reasonable and commensurate with safety. However, the team found the performance criteria for the uninterruptible alternating current power supplies to be inadequate in that unavailability was not monitored. This is an example of Violation 50-397/9618-01,which was discussed above.

(9) Main Steam Leakage Control System

The Main Steam Leakage Control Systems A and B were identified as low-risk, standby systems. The systems were monitored for reliability and unavailability. Main Steam Leakage Control System A was monitored under Category (a)(1) and Main Steam Leakage Control System B was monitored under Category (a)(2).

During the current monitoring period, the system engineer identified three maintenance preventable functional failures, including one repetitive failure, associated with Main Steam Leakage Control System A. These failures were associated with a system flow transmitter drifting out-of-calibration. The transmitter was identified as defective and replaced. There were no failures associated with System B. The team reviewed the goals established for System A and the performance criteria established for both Systems A and B. The team found that the goals were designed to monitor transmitter performance and appropriately focused on the cause for exceeding the performance criteria of one repeat failure. The team also reviewed corrective maintenance historical data and problem evaluation requests for a 2-year period. No additional functional failures were identified.

The team concluded that unavailability performance was adequately monitored.

(10) Main Steam System

The team noted that the main steam system had 18 functions identified. All functions were monitored under Category (a)(2). Of these, 8 were considered risk significant and 1 was considered standby. The standby function being monitored was the main steam safety relief valves in the automatic depressurization mode. This function was monitored for both reliability and unavailability. There were no functional failures associated with the main steam or automatic depressurization system functions. A sample of work requests and problem evaluation requests were reviewed by the team to determine if maintenance preventable functional failures had occurred. No potential failures were identified.

The team concluded that unavailability performance was adequately monitored.

(11) Reactor Building Return Air System

The reactor building return air system was identified as a risk-significant, standby system. The system consisted of individual cooling fan units in each critical equipment room, such as pump rooms and motor control centers. The typical cooling fan unit was considered standby and would start upon the applicable supported system starting. The system was being monitored under Category (a)(2) using performance criteria based on functional failures. The unavailability for each fan was determined by totaling the unavailability hours of the supported systems and the unavailability of the fans.

During the current monitoring period, there were no maintenance preventable functional failures identified by the system engineer. A sample of work requests and problem identification requests were reviewed by the team to determine if maintenance preventable functional failures existed. No potential failures were identified.

The team reviewed start demands for individual cooling fan units and found that the units associated with pump rooms started when the associated pumps were started during routine testing. However, for the motor control center rooms the system engineer could identify only two start demands per year. Based on this data, the team questioned the expert panel as to whether system demands were taken into account when establishing the reliability performance criteria of three maintenance preventable functional failures per two refueling cycles.

During the review of problem evaluation request for the reactor building return air system, the team noted that the system engineer had identified a functional failure associated with the reactor building exhaust air system. Although the system engineer had considered the condition a functional failure, the system engineer concluded that the failure was not maintenance preventable. Specifically, secondary containment was rendered inoperable for a short period of time when a bolt fell out of the linkage to Damper REA-AD-1B. When Fan REA-FN-1B was started the damper did not open as designed. The system engineer did not consider this maintenance preventable and concluded, in part, that this was a random type of failure that would occur and would be addressed by making the necessary repairs. The team disagreed with the system engineer and expert panel's conclusion.

NUMARC 93-01, paragraph 9.3.3, states that structures, systems, and components that provide little or no contribution to system safety function could be allowed to run to failure. It appeared to the team that this functional failure was being treated as a run to failure condition without providing justification on why the structures, systems, and components failure provided little or no contribution to system safety function. This indicated a potential weakness in the Maintenance Rule Program related to recognition of maintenance preventable functional failures.

(12) Radwaste Building Mixed Air System

The radwaste building mixed air system was identified as a nonrisk-significant, normally-operating system. The safety-related functions of the system included supplying air to the main control room, cable spreading room, and critical switchgear rooms. The system was being monitored under Category (a)(2). The team limited their review of this system to the control room and switchgear room ventilation functions.

During the current monitoring period, the system engineer identified two maintenance preventable functional failures associated with the control room ventilation function. A third maintenance preventable functional failure was associated with the switchgear ventilation function. The team reviewed these failures and concluded they were appropriately dispositioned. The team reviewed a sample of problem evaluation requests to determine if other maintenance preventable functional failures had occurred. No additional functional failures were identified.

(13) Floor Drain Radioactive System

The safety-related functions associated with the floor drain radioactive system were tracked under the primary- and secondary-containment isolation and containment integrity functions. The nonsafety-related function was tracked under the floor drain radioactive system. The risk-significant function of the system was associated with the primary containment isolation function. The system's functions werc being monitored under Category (a)(2).

The system engineer had identified one maintenance preventable functional failure associated with the nonsafety-related function. No functional failures were identified for the primary- or secondary-containment isolation or containment integrity functions. The team reviewed historical data associated with Containment Isolation Valves FDR-V and FDR-V. The valves had a history of inservice testing failures and were the subject of an NRC violation documented in NRC Inspection Report 50-397/96-11. The team questioned why no functional failures were identified for these valves.

Concerning containment isolation valves, the Maintenance Rule Program engineer stated that an individual valve failure to close on demand would be considered a functional failure. For Type-C leakage testing, both valves in a containment penetration would have to concurrently fail to be considered a functional failure. For ASME Section XI testing, a single valve failure to meet test criteria would not be considered a functional failure. However, if the valve failed to close within its design basis Technical Specification value, it would be considered a functional failure. The team concluded that this approach to the determination of failures was reasonable.

During a review of the historical data for the system, the team noted that Problem Evaluation Request 296-0045, initiated on January 20, 1996, identified a condition where Valve FDR V-4 failed to close. The system engineer evaluated the cause for this failure and concluded that the failure was a result of foreign material in the valve body. The team questioned why this event was not characterized as a maintenance preventable functional failure. After further review, the Maintenance Rule Program engineer indicated that the failure was a functional failure and most likely maintenance preventable. The team considered this as an additional example of a weakness associated with the licensee program to effectively recognize maintenance preventable functional failures. No additional functional failures were identified.

(14) Reactor Core Isolation Cooling System

Six functions of this system were identified as being within the scope of the Maintenance Rule. Five of the functions were designated risk significant and three of those risk-significant functions were monitored under other systems. An augmented quality function and a nonsafety-related function, both described as providing water to an isolated reactor pressure vessel, were monitored under Category (a)(2). The performance of these functions was monitored using reliability and unavailability.

There were two random maintenance preventable functional failures, and no repetitive maintenance preventable functional failures. Unavailability identified by the licensee for this system met the performance criteria. The team found the unavailability performance criteria to be reasonable and commensurate with safety.

(15) <u>High Pressure Core Spray System</u>

Ten functions of this system were identified as being within the scope of the Maintenance Rule. Eight functions were classified as risk significant and three were monitored under other systems. Seven functions were monitored under this system in Category (a)(2). Reliability measured by maintenance preventable functional failures and unavailability were the performance criteria for this system.

There were no maintenance preventable functional failures and unavailability was within the limit established by the licensee for this system. The team found that the unavailability performance criterion was reasonable and commensurate with safety.

(16) <u>Average Power Range Monitors</u>

Two functions of this system were identified as being within the scope of the Maintenance Rule. Both functions were classified as risk significant and monitored under Category (a)(2) at the train level. Only maintenance preventable functional failures were monitored at the train level for this system. The system unavailability was not monitored.

There was one random maintenance preventable functional failure (Train A) and no repetitive maintenance preventable functional failures identified by the system engineer for this system. The team reviewed a sample of problem evaluation requests on this system and identified no other failures.

(17) <u>Process Radiation Monitors</u>

Four functions of this system were identified as being within the scope of the Maintenance Rule. Two of the functions were monitored under different systems. Two of the functions were risk significant and were being monitored under Category (a)(1).

The functional performance criterion for reliability was monitored by tracking random and repetitive maintenance preventable functional failures. Unavailability was not monitored. The system engineer had identified seven random maintenance preventable functional failures and two repetitive maintenance preventable functional failures for this system. Thus, the system had been appropriately classified as a Category (a)(1) system.

The team also reviewed a sample of problem evaluation requests written on this system that identified functional failures of process radiation monitors. These failures should have been counted against the system in which the monitor was installed; however, the system engineer did not initially identify any of these failures as maintenance preventable.

Problem Evaluation Request 295-1016 was initiated in response to a monitor with a noisy sample pump on April 29, 1995. Maintenance management deferred the replacement of the pump. Before the replacement was accomplished, the pump failed on September 9, 1995, and rendered the monitor inoperable (a functional failure). The team considered this to be maintenance preventable because the deferred maintenance could have been performed prior to the failure. Licensee personnel agreed with the determination after additional review.

The team reviewed Problem Evaluation Requests 295-0825 and 295-0829, which identified back-to-back failures of another radiation monitor. A containment monitor sample pump apparently failed on July 5, 1995. The sample rack was declared inoperable (a functional failure) and a monitor sample flow switch replaced because it was assumed to be the cause of the failure. On July 7, 1995, the monitor failed again and this time the pump was replaced. The team considered this to have been a maintenance preventable failure on the basis that the initial maintenance activity failed to identify the root cause (defective pump) and correct it. However, the system engineer did not consider this to be a maintenance preventable functional failure. After the pump was replaced, there were no further monitor failures identified.

The team reviewed Problem Evaluation Request 295-1035 that identified the failure of yet another monitor. On September 17, 1995, a chemistry technician found the turbine building ventilation exhaust radiation monitor sample line disconnected. The monitor was declared inoperable (a functional failure). The cause of this failure was the inadvertent loosening of fittings that occurred while craft personnel were replacing a line filter. The team considered this to have been a maintenance preventable functional failure on the basis of the failure of the craft personnel to tighten the loosened connections. The system engineer had not considered this to be maintenance preventable.

The team considered these to be additional examples of a weakness associated with the Maintenance Rule Program to effectively recognize maintenance preventable functional failures.

b.2 <u>Use of Industry-Wide Operating Experience</u>

The Maintenance Rule as implemented using the guidance in NUMARC 93-01 requires that industry-wide operating experience be taken into consideration, where practical, when establishing goals under Category (a)(1) or performance criteria under Category (a)(2).

For those systems reviewed, the team noted that industry-wide operating experience was considered when establishing goals under Category (a)(1) and performance criteria under Category (a)(2).

b.3 Monitoring and Trending

The statements of consideration for the Maintenance Rule indicate that where failures are likely to cause loss of an intended function, monitoring should be predictive in nature providing early warning of degradation. The responsibility for trending and evaluating the performance of system-related functions had been assigned to the engineering programs group. The team observed engineering personnel use of a trending and data tracking system that was adequate for the task of identifying changing performance of structures, systems, and components within the scope of the Maintenance Rule.

The team reviewed documentation and interviewed responsible system engineers to determine the effectiveness of monitoring and trending activities for various systems. The team found that the reliability and unavailability data, in support of the performance criteria, was collected and distributed by engineering programs to the responsible system engineers. There were good systems and processes in place for evaluating and identifying degraded parameter performance related to specific components or systems. These systems allowed system engineers to perform predictive monitoring of their systems using data obtained from vibration analysis, oil analysis, and periodic readings of parameters such as temperature, pressure, and flow rate.

b.4 Corrective Actions

The team reviewed the process and procedures for establishing corrective actions. The results of this review for two of those systems are described below.

The team reviewed problem evaluation reports and corrective action reports and interviewed responsible system engineers for selected failures to assess the adequacy of the corrective action process. The team determined that, in general, the cause determinations were of an appropriate depth commensurate with the safety significance of the failure, and included an evaluation whether the failures should be classified as maintenance preventible functional failures. Corrective actions were established and implemented to address problems and preclude recurrence.

As noted, the team identified instances where functional failures were not classified as maintenance preventible when they appeared to meet the guidance in NUMARC 93-01 and agree with the definition in paragraph 3.2.5 of Technical

Services Instruction TI 4.22. However, the team looked further and determined that if the licensee had identified the failures as additional maintenance preventable functional failures, no additional classification of systems into Category (a)(1) would have occurred.

(1) Process Radiation Monitors

This system was placed in Category (a)(1) because it exceeded both the random and repetitive maintenance preventable functional failures in October 1995. The root causes were established in Problem Evaluation Request 295-1131. The goal was established by the expert panel and documented in meeting minutes. The goal established was to have no cold head failures until March 1997. The cold head chilled the detector in the stack monitor. The cold head failures occurred because of a misconception of the design service life. The goal would test the new estimate of service life through two life cycles. The goal focused on validating the adequacy of the corrective action.

The team concluded that the cause evaluation, corrective action, and established goal were adequate and commensurate with safety.

(2) Emergency Lighting

The system engineer had identified one augmented quality function and three nonsafety-related functions for the emergency lighting systems. The emergency lighting systems were in Category (a)(1) because of seven documented failures. The system engineer monitored only maintenance preventable functional failures (five random failures or one repetitive failure) for the emergency lighting system because it was considered a nonrisk-significant system.

The system engineer identified that the performance of the emergency lighting system exceeded the performance criteria on August 7, 1996, and initiated Problem Evaluation Request 296-0618 to evaluate the issue. While the system was considered to be in Category (a)(1), the team noted that as of November 22, 1996, the system engineer had not determined the cause of the failures or whether or not the failures were maintenance preventable. The team found that, while the corrective action program was being implemented, the response was not timely.

The team found that the understanding of what constituted a functional failure of the emergency lighting system was lacking. The Maintenance Rule Program did not provide definitive examples of what would be considered a functional failure of the emergency lighting system. This was illustrative of the weakness in the Maintenance Rule Program related to recognition of maintenance preventable functional failures.

The licensee submitted additional information on January 2, 1997, related to the NRC-identified weakness in the determination of maintenance preventable functional failures. The licensee planned the following actions to address the issue:

- Revise the scoping matrix data base to eliminate confusing, non-essential information and functions;
- Assign a specific system engineer to disposition each functional failure, Issue a report to management that tracks ongoing failure disposition;
- Management will challenge functional failure dispositions;
- Review all performance evaluations reports that reported failures for the past eight quarters;
- Revise the corrective action program procedure to require the initiation of performance evaluation requests to facilitate the identification and tracking of potential maintenance preventable functional failures; and
- Administer additional training to the engineering support staff. This training was started on December 5, 1996.

c. Conclusions

c.1 Safety Consideration in Setting Goals and Performance Criteria

The established goals and unavailability performance criteria for Categories (a)(1) and (a)(2), respectively, were found to be generally commensurate with safety. Several notable exceptions, however, were identified by the team as described previously in this report. These examples of failure to establish adequate reliability and unavailability performance criteria commensurate with safety were identified as a violations of 10 CFR 50.65.

c.2 Industry-Wide Operating Experience

The team noted that industry-wide operating experience was appropriately considered when establishing goals under Category (a)(1) and performance criteria under Category (a)(2).

c.3 Monitoring and Trending

The team found that the system engineers and engineering programs personnel performed adequate monitoring and trending of program monitored structures, systems, and components. In addition, component parameter trending was effective in identifying degradation. As a result, system engineers were cognizant of their system's health.

c.4 Corrective Actions

The team found that the system engineers performed adequate cause determinations and established appropriate corrective actions with the exceptions noted in Section M1.6.b.4 above. Some determinations did not appear to be timely. Additionally, the inability to identify some maintenance preventable functional failures was identified as a weakness in the licensee's program.

The team also concluded that actions planned by the licensee, as stated in the additional information submitted on January 2, 1997, and related to the identified weakness, were adequate to resolve the concerns.

M2 Maintenance and Material Condition of Facilities and Equipment

a. Inspection Scope (62706)

In the course of verifying the implementation of the Maintenance Rule using Inspection Procedure 62706, the team performed in-plant walkdowns to examine the material condition of some systems.

b. Observations and Findings

The team generally found that the systems inspected appeared to be free of corrosion and fluid leaks. Also, systems and equipment appeared to be properly preserved for the environment in which they were located. The team identified some minor housekeeping problems associated with trash and debris, probably left over from prior work performance. These were reported to licensee representatives who promptly addressed each issue.

c. Conclusions

For those systems and equipment that were inspected, material condition appeared good.

M7 **Quality Assurance in Maintenance Activities**

M7.1 Licensee Self Assessment

a. Inspection Scope (62706)

The team reviewed the assessment that had been performed on the licensee's Maintenance Rule Program from its inception to the time of the inspection.

b. Observations and Findings

No self-assessment activity related to the Maintenance Rule Program had been conducted. The Nuclear Energy Institute had conducted an assist-site visit and issued the results in a letter dated October 20, 1995. The visit provided mostly positive feedback.

c. Conclusions

The team was not able to reach a conclusion regarding the effectiveness of the licensee's self assessment as no assessment had been performed.

III. Engineering

E2 **Engineering Support of Facilities and Equipment**

E2.3 Review of Updated Final Safety Analysis Report (UFSAR) Commitments

A recent discovery of a licensee operating their facility in a manner contrary to the UFSAR description highlighted the need for a special focussed review that compares plant practices, procedures and/or parameters to the UFSAR descriptions. While performing the inspections discussed in this report, the team reviewed numerous portions of the UFSAR that related to the areas inspected. The team verified that the UFSAR wording was consistent with the observed plant practices, procedures and/or parameters. Additionally, the team did not identify any cases where the facility was not configured or operated in accordance with the UFSAR.

E4 **Engineering Staff Knowledge and Performance**

E4.1 Engineers Knowledge of Maintenance Rule

a. Inspection Scope (62706)

The team interviewed system engineering organization personnel to assess systems' condition and system engineers' understanding of the Maintenance Rule Program and their associated responsibilities. The team also reviewed the training that had been administered to system engineering personnel.

b. Observations and Findings

Those system engineers that were interviewed had a basic understanding of the Maintenance Rule. The system engineers' knowledge of the Maintenance Rule, as it applied to their systems, was limited but sufficient to perform their current functions. Knowledge of probabilistic risk assessment and the plant-specific individual plant examination, and its impact on their systems, was also limited. The system engineers relied heavily on engineering programs personnel, although many of the Maintenance Rule functions and responsibilities were to be transitioned from engineering programs to the system engineers.

The team identified a weakness in the ability of a sample of system engineers to identify maintenance preventable functional failures. This represented a program weakness that could be addressed by providing improved training and better guidance to the system engineers.

Some system engineers did not clearly understand their responsibility for determining whether or not a structure, system, or component could be moved between Categories (a)(2) and (a)(1) and did not know that the system engineer was responsible for making that decision.

The team determined some system engineers were not fully cognizant of system boundaries with respect to the Maintenance Rule. This was due, in part, to the occasional Maintenance Rule Program functional boundaries that were not fully defined.

The team reviewed documentation and determined that all, except one of the current system engineers, had received approximately 1-2 hours of training about his/her Maintenance Rule responsibilities.

Systems engineers exhibited a strong knowledge of their assigned systems and were generally knowledgeable of the Maintenance Rule. In general, the team found that the system engineers performed adequate monitoring and trending and were cognizant of their system's health.

c. Conclusions

The inability of some system engineers to identify maintenance preventable functional failures was identified as a weakness. Although some performance weaknesses were identified for system engineers in meeting their Maintenance Rule responsibilities, the performance was adequate to meet the requirements of the Maintenance Rule. Performance of these personnel was good when the limited training and lack of detailed guidance was considered. All system engineers exhibited an excellent knowledge of their system conditions.

V. Management Meetings

X1 Exit Meeting Summary

The team discussed the progress of the inspection on a daily basis and presented the inspection results to members of licensee management at the onsite exit meeting on November 22, 1996. In addition, a followup exit meeting was conducted telephonically on January 16, 1997, to discuss the results of the in-office review of the licensee's supplemental information provided in their January 2, 1997, letter. The licensee acknowledged the findings presented.

The team asked the licensee staff and management whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

ATTACHMENT

PARTIAL LIST OF PERSONS CONTACTED

Licensee

R. Barbee, Assistant Manager, System Engineering
W. Barley, Manager, Quality Assurance
P. Bemis, Vice President, Nuclear Operations
R. Levline, Supervisor, Engineering Programs
J. McDonald, Manager, System Engineering
T. Meade, Manager, Engineering Programs
J. Muth, Manager, Quality Services
J. Parrish, Chief Executive Officer
G. Sanford, Manager, Maintenance
G. Smith, Plant General Manager
D. Strote, Manager, Operations Support
J. Swailes, General Manager, Engineering
R. Webring, Vice President, Operations Support

NRC

T. Dexter, Regional Inspector, Plant Support Branch
D. Powers, Chief, Maintenance Branch
G. Replogle, Resident Inspector, Reactor Project Branch F
D. Schaefer, Regional Inspector, Plant Support Branch
J. Shackleford, Probability Risk Assessment Branch

INSPECTION PROCEDURE USED

IP 62706	Maintenance Rule

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

50-397/9618-01	VIO	Failure to Monitor Structure, System, and Component Unavailability
50-397/9618-02	VIO	Inadequate Monitoring of Structure, System, and Component Reliability

LIST OF PROCEDURES REVIEWED

TI 4.22	"Maintenance Rule Program," Revision 0
TI 4.23	"Maintenance Rule Structural Inspections," Revision 0
PPM 1.16.6B	"Voluntary Entry into Technical Specification Action Statements for Work Activities," Revision 6
	"WNP-2 Maintenance Rule Program System Scoping," Revision 3
PPM 1.3.7E	"Work Scheduling," Revision 3
PPM 1.16.8	"Outage Management and Shutdown Safety," Revision 7
TI 4.21	"Oram Program Control," Revision 1

LIST OF DOCUMENTS REVIEWED

Maintenance Rule Quarterly Report, dated 10/25/96

WNP2 Individual Plant Examination (IPE), Revision 1, July 1994.

Expert Panel Meeting Minutes, March 21, 1995.

EPRI developed software program ORAM (Outage Risk Assessment and Management) Version 2.1 for Windows

Problem Evaluation Requests

295-0357	295-1291	296-0045
295-0439	296-0222	296-0322
295-0825	296-0244	296-0473
295-0829	296-0474	296-0554
295-1016	296-0539	296-0595
295-1030	295-0128	296-0704
295-1035	295-0852	296-0708