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EXECUTIVE SUMMARY

E. I. Hatch Nuclear Plant, Units 1 and 2
NRC Inspection Report 50-321/96-12 and 50-366/96-12

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 1-week period of inspection by inspectors from Region II and the Office of Nuclear Reactor Regulation.

Operations

- Licensed operators understanding of the Maintenance Rule was commensurate with their specific duties and responsibilities relating to the Maintenance Rule. Senior Reactor Operators and Shift Technical Advisors demonstrated a very good understanding of their responsibilities under the Maintenance Rule (Section O4.1).

Maintenance

- Based on the sample of functions reviewed, required structures, systems, or components (SSCs), with the exception of four systems were included within the scope of the Maintenance Rule. A violation was identified for failure to include all structures, systems, and components within the scope of the Maintenance Rule as required by 10 CFR 50.65 (b) (Section M1.1).

- The licensee's procedures for performing the periodic evaluation met the requirements of the Maintenance Rule. The Maintenance Rule Initial Periodic Assessment for the period May 12, 1994, to July 1, 1996, issued just prior the July 10, 1996 regulatory implementation date of the Maintenance Rule, was considered a positive initiative for implementation of this evaluation process (Section M1.3).

- The licensee's approach to balancing reliability and unavailability was adequate. However, since the licensee had not established adequate performance criteria for several risk significant SSC functions, balancing reliability and unavailability for those functions would not be possible (Section M1.4).

- The licensee considered safety in establishment of goals and monitoring for systems and components reviewed. A violation was identified for failure to follow procedure for implementation of the Maintenance Rule associated with lack of identification of maintenance preventable functional failures for the Unit 1 Traveling Screens/Trash Rake System. A weakness was identified associated with fragmented documentation for review of problems and corrective actions for the Unit 2 primary Containment Chilled Water System. The licensee adequately addressed 10 CFR 50.63 Station Blackout Maintenance Rule requirements and these requirements had been implemented into the Emergency Diesel Generator performance criteria. (Section M1.6).

- Performance criteria was established, industry-wide operating experience was consid-

ered, where practical, appropriate trending was being performed, and corrective action was taken when SSCs failed to meet performance criteria, or when a SSC experienced a Maintenance Preventable Functional Failure for most of the SSCs reviewed. An inspector followup item was identified for followup on action to clarify the definition of MAINTENANCE for implementation of Maintenance Rule requirements. An inspector followup item was identified for followup on licensee actions to provide performance criteria for structures after industry resolution of the issue (Section M1.7).

- Plant material condition observed during walkdowns was generally good. Preservation of equipment by painting was considered to be good. Several areas were noted to be in very good housekeeping condition. Other housekeeping/material condition discrepant items noted were indicative of lack of attention to detail on the part of operations and engineering personnel who make frequent tours to the areas (Section M2.1).

- Two 1996 Safety Audit and Engineering Review Group audits assessing implementation of Maintenance Rule requirements were reviewed. The audits identified several areas needing attention and provided good observations associated with Maintenance Rule implementation. However, many findings or deficiencies discussed in attached audit notes were not documented as findings or entered into the licensee's corrective action program. The lack of documentation of findings or deficiencies was considered a weakness in the licensee's audit process (Section M7.1).

Engineering

- The licensee's approach in performance of risk ranking for the Maintenance Rule was adequate. The licensee's use of performance criteria for reliability and unavailability, although different from what was assumed in the Probabilistic Risk Assessment (PRA), did not adversely affect the total plant risk. The failure to perform a sensitivity analysis when initially establishing reliability performance criteria was considered a weakness. The failure to perform additional risk ranking using Maintenance Rule performance criteria new data was considered a minor weakness. A violation was identified for failure to establish adequate performance criteria for SSC risk significant functions (Section M1.2).

- Several process weaknesses regarding the licensee's assessment of the safety impact when removing SSCs from service for monitoring and preventive maintenance were identified. The omission of two risk significant functions from the matrix, the lack of assessments for non-risk significant SSC function combinations, and misleading guidance regarding priorities following emergent failures were examples of these weaknesses.

The licensee's systematic approach to the development of the matrix was considered a strength. The licensee process for ensuring that critical safety functions were available during planned outages was good. The overall approach to assessing the risk impact of maintenance activities was considered adequate (Section M1.5).

- System engineers were knowledgeable of their systems and implemented the Maintenance Rule requirements, for the most part, in a good manner. Also, some system engineers demonstrated an ownership for their systems that was noteworthy (Section E4.1).

Report Details

Summary of Plant Status

Units 1 and 2 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). Inspection was performed by a team of inspectors that included a team leader and three Region II based inspectors, and one inspector from the Probabilistic Safety Assessment Branch, Office of Nuclear Reactor Regulation, with support from one reactor engineer from the Quality Assurance and Maintenance Branch, Office of Nuclear Reactor Regulation. The licensee provided an overview presentation of the program to the team on the first day of the inspection.

I. OPERATIONS

O4 Operator Knowledge and Performance

O4.1 Operator Knowledge of Maintenance Rule

a. Inspection Scope (62706)

During the inspection, the team interviewed eight licensed operators which included 3 reactor operators (RO), three senior reactor operators (SRO), and two SRO licensed shift technical advisors (STA) to determine if they understood the general requirements of the Maintenance Rule and their particular duties and responsibilities for its implementation.

b. Observations and Findings

Operator tasks associated with the Maintenance Rule focused mainly on authorizing and removing equipment from service, and evaluating equipment out-of-service combinations using a matrix provided in Administrative Control Procedure 90AC-OAP-002-0S, SCHEDULING MAINTENANCE. The inspectors reviewed 90AC-OAP-002-0S, Revision 0, and discussed its application with operators in the control room. Operators interviewed generally understood the purpose of the Maintenance Rule and required duties for Maintenance Rule implementation. SROs and STAs interviewed had a very good understanding of the Maintenance Rule and all of its ramifications. ROs normally provided feedback to the SROs when equipment was being taken out of service.

c. Conclusions

Licensed operators understanding of the Maintenance Rule was commensurate with their specific duties and responsibilities as they relate to the Maintenance Rule. SROs and STAs demonstrated a very good understanding of their responsibilities under the Maintenance Rule.

II. MAINTENANCE

M1 Conduct of Maintenance

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

a. Inspection Scope (62706)

Prior to the onsite inspection, the team reviewed the Hatch Nuclear Plant Final Safety Analysis Report, Licensee Event Reports, the Emergency Operating Procedures, previous NRC Inspection Reports, and other information provided by the licensee. The team selected an independent sample of SSCs that the team believed should be included within the scope of the Maintenance Rule, which was not classified as such by the licensee. During the onsite portion of the inspection, the team used this list to determine if the licensee had adequately identified the structures, systems, and components that should be included in the scope of the Maintenance Rule in accordance with 10 CFR 50.65 (b).

b. Observations and Findings

The licensee appointed a panel to select those SSCs to be included in the scope of the Maintenance Rule. The panel reviewed 256 functions and determined that 140 were in the scope of the Maintenance Rule (80 safety related and 60 non-safety related functions). In addition, 12 structures were placed within the scope of the Maintenance Rule.

The team reviewed the licensee's data base which included the HATCH NUCLEAR PLANT 10 CFR 50.65 MAINTENANCE RULE SCOPING MANUAL, Revision 1, and sampled selected structures, systems, and components and verified they were included in the Maintenance Rule. The following exceptions were identified:

- The licensee had not included system R42 (Appendix R Emergency Lighting), and system R52 (Non-Appendix R Emergency Lighting) in the scope of the Maintenance Rule. Further review of these systems determined that both were relied upon to mitigate accidents or transients during performance of abnormal or emergency procedures.

- The licensee had not included system R51 (Communications System) in the scope of the Maintenance Rule. Further review of this system determined that

the system was relied upon to mitigate accidents or transients, and was used in the proper performance of Off-Normal and Emergency Operating evolutions. The operators verified, based on the inspectors questions, that communications equipment plays a vital role in responding to off normal conditions.

- The licensee had not included system W24 (Cooling Towers) in the scope of the Maintenance Rule. The team reviewed the licensee's power operating history, and noted that Unit 2 experienced a 40 percent power reduction on March 24, 1995, when cooling tower number 6 fill material collapsed. Additionally, on September 1, 1995, Unit 2 experienced a power reduction from 89 percent to approximately 52 percent power due to one cell of cooling tower number 5 fill material collapsing. This condition blocked the flow of circulating water from the cooling tower to the flume. The Unit 2 reactor was manually scrammed from approximately 28 percent power on September 2, 1995, after operators observed a decrease in condenser vacuum due to air binding of a condenser waterbox. LER 50-0366/95-03 discussed the manual scram event. The team concluded that the cooling towers should be in the scope of the Maintenance Rule due to identification of failure modes which could cause a reactor scram or actuation of a safety-related system.

10 CFR 50.65 (b) establishes the scoping criteria for selection of safety related and non-safety related structures, systems, or components to be included within the Maintenance Rule program. Scoping criteria includes non-safety related structures, systems, or components that are relied upon to mitigate accidents or transients, or are used in the plant emergency operating procedures, or whose failure could prevent safety-related structures, systems, and components from fulfilling their safety-related function, or whose failure could cause a reactor scram or actuation of a safety-related system. The deficiencies concerning scoping discussed above are included as examples of a Violation of these requirements, and were identified as Violation **50-321, 366/96-12-01, (Failure to Include All Structures, Systems, and Components in the Scope of the Maintenance Rule as Required by 10 CFR 50.65 (b))**.

c. Conclusions

Based on the sample of functions reviewed, required SSCs, with the exception of four systems, were included within the scope of the Maintenance Rule. A violation was identified for failure to include all SSCs within the scope of the Maintenance Rule as required by 10 CFR 50.65 (b).

M1.2 Safety or Risk Determination

a. Inspection Scope (62706)

Paragraph (a)(1) of the Maintenance Rule requires that 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 structure, system, or component (SSC) functions should be monitored at the train, system, or plant level. The team reviewed the methods that the licensee established for making these required safety determinations. The team also reviewed the safety determinations for the systems that were reviewed in detail during this inspection.

b. Observations and Findings

In addition to determining which SSC functions were within the scope of the Maintenance Rule, the licensee's expert panel established the risk significance ranking of SSC functions, performance criteria of SSC functions, and where necessary, goals for SSC functions. The final risk significance ranking was based on a combination of results from a PRA and expert panel judgement based on deterministic considerations. The licensee used quantitative measures of risk achievement worth and risk reduction worth. The licensee did not use the core damage frequency contribution importance measure. The licensee stated that this measure would not provide meaningful results due to the type of PRA model (large event tree-small fault tree) used in their PRA. The team concurred with this assessment. Cutoff values for high and low risk significance were set according to the guidance provided in NUMARC 93-01,"Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants." The risk rankings were in both terms of core damage frequency (Level 1 analysis) and large early release frequency (Level 2 analysis). The PRA risk ranking identified 36 functions as risk significant. Additionally, the expert panel determined that 17 SSC additional functions were risk significant to accommodate PRA modeling limitations. Within those functions that the licensee had determined to be in the scope of the Maintenance Rule, the inspectors did not identify any functions that had been misranked.

The team observed that the licensee did not have documentation regarding what components were modeled in the PRA that were required for the SSC function to be available. Instead, the licensee relied on staff plant knowledge and experience to recognize which components were needed to support the SSC function. The team did not identify any issues resulting from this lack of documentation:

b.1 Risk Ranking Methodology

The inspectors reviewed a sample of SSC functions covered by the Maintenance Rule that the expert panel had categorized as non-risk significant. The inspectors assessed if the expert panel had adequately established the safety significance of those SSC functions. All of the sampled functions were modeled in the PRA. The inspectors found that the function modeling in the PRA was sufficiently detailed. Plant specific data was used when statistically sufficient data was available. Otherwise, the licensee used generic data. No Bayesian updating was used in the sample. Success criteria for the selected functions were derived from engineering analysis.

The inspectors also reviewed the truncation limits used during the risk ranking process. Truncation limits are imposed on PRA models in order to limit the size and complexity of the results to a manageable level. The licensee used a truncation level

of 1E-10 when quantifying the PRA. This was five orders of magnitude less than the overall core damage frequency (CDF) estimate of 2E-5. Subsequent to the initial risk ranking, the licensee quantified the PRA with a truncation level of 1E-12 and one additional function exceeded the numerical cut off for risk achievement worth. However, the expert panel had already determined that the function was risk significant based on their judgement. The licensee's approach to truncation with respect to the risk ranking process was adequate.

Based on the review of the sampled SSC functions, it appeared that the PRA's level of detail, truncation limits and quality were 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 (i.e. PRA) are maintained. In many instances, the licensee elected to use performance criteria for reliability and unavailability that was different than what was used in the risk determination for many of the risk significant SSCs. The PRA used actual plant specific values for unavailability and actual plant specific or generic values for reliability.

The licensee used reliability performance criteria that was slightly different from the assumptions in the Hatch PRA for many SSC functions. The inspectors noted that the licensee initially attempted to establish a relationship between the reliability performance criteria and the failure probabilities assumed in the PRA. However, after developing this relationship for six SSC functions, the licensee elected to use the judgement of the expert panel to establish the reliability performance criteria for the remaining SSC functions. The expert panel evaluated and adjusted the remaining SSC reliability performance based on actual historical performance of the SSC function. However, at the time of the inspection, the licensee had not performed an analysis that demonstrated that the performance criteria used for reliability preserved the assumptions used in the PRA, or that the use of the criteria did not have an adverse impact on risk ranking.

The inspectors performed an independent review of the reliability performance criteria for risk significant SSC functions and found that, with the exception of the core spray system, the licensee had established reliability performance criteria that preserved the reliability assumptions in the PRA. Subsequent to the inspection, the licensee performed a sensitivity study that satisfactorily demonstrated that their selection of 2 MPFFs for the core spray reliability performance criteria would result in a negligible increase in CDF. The lack of performing a sensitivity analysis when initially establishing reliability performance criteria was considered a weakness.

The licensee used somewhat higher unavailability performance criteria than used in the PRA for a number of SSC functions. The licensee had performed a sensitivity analysis that demonstrated that the use of the unavailability performance criteria would not have had a significant impact on total CDF. (i.e. the use of the Maintenance Rule criteria would have resulted in an approximately 43% increase in CDF and 32% increase in large early release frequency (LERF) if all of the SSC functions were assumed to be simultaneously at the upper end of their allowable values). The inspectors noted that the licensee did not perform an additional risk ranking to determine that the overall ranking was not adversely affected by the new data. However, based on the final results, the inspectors did not determine that this would have resulted in any new SSC functions being categorized as risk significant. The team considered the lack of performing the additional risk ranking to be a minor weakness.

The licensee had established inadequate performance criteria for several risk significant SSC functions. Problems in this area included the following.

- The licensee did not establish performance criteria for the Primary Containment System. The licensee stated that this function would be monitored under 10 CFR 50, Appendix J. However, no criteria had been established to determine satisfactory performance and the need for goal setting. The team found that a procedure weakness contributed to this problem in that a note in Administrative Procedure 40-AC-ENG-020-0S, MAINTENANCE RULE (10 CFR 50.65) IMPLEMENTATION AND COMPLIANCE, Revision 1, allowed the use of an existing plant program in lieu of performance criteria, without proper justification.

- The licensee elected to use general plant level performance criteria for the Feed and Condensate and the Circulating Water Systems. NUMARC 93-01, Section 9.3.2, required that system or train level criteria be used for risk significant functions.

- The licensee did not establish unavailability performance criteria for Electro-hydraulic Control (EHC) and the Unit 2 Primary Containment Chilled Water Systems. The Hatch UFSAR (Chapters 10.2.A.0 and 9.4.6.2) described both systems as having standby features. The EHC system has a standby pump that receives an automatic start signal on low EHC manifold pressure. The Unit 2 Containment Chilled Water System has a standby chiller that receives an automatic start signal if the running chiller fails. If the standby features failed when demanded, then the function would also fail. The team concluded that the licensee could not determine the effectiveness of maintenance on these systems without monitoring unavailability.

- The licensee did not establish unavailability performance criteria for several risk significant highly reliable functions. The licensee stated that unavailability criteria for these functions was not necessary since these functions were historically highly reliable and availability was adequately controlled by Hatch technical specifications. Examples of these risk significant SSC functions

included Plant AC Electrical System, DC Electrical System, Primary Containment Isolation System, and the Analog Transmitter Trip System. The team concluded that the licensee could not determine the effectiveness of maintenance on these systems without monitoring unavailability.

10 CFR 50.65 (a)(1) and (a)(2) require that the performance or condition of structures, systems, and components shall be monitored against licensee established goals unless "it has been demonstrated that the performance or condition of a structure, system or component is being effectively controlled through the performance of appropriate preventive maintenance..." Failure to establish adequate performance criteria for the above SSC risk significant functions that would have demonstrated that function performance or condition was being effectively controlled via preventive maintenance is identified as Violation **50-321, 366/96-12-02 (Failure to Establish Adequate Performance Criteria for SSC Risk Significant Functions)**.

b.3 Expert Panel

The team reviewed the licensee's process and procedures for establishment of an expert panel. The licensee established the expert panel in accordance with Section 9.3.1 of NUMARC 93-01. The expert panel membership included representatives from operations, maintenance, engineering support, Nuclear Safety and Compliance (NSAC), and outages and planning. The Maintenance Rule coordinator and a PRA representative served as advisors to the panel. The expert panel's responsibilities included the final authority for decisions regarding Maintenance Rule scope, risk significance, and performance criteria selection. At the time of the inspection, the expert panel possessed a total of 87 person years of nuclear power experience. Hatch procedure 40AC-ENG-020-0S contained the guidance regarding expert panel activities, member qualifications and expert panel meeting conduct.

The team members observed an expert panel meeting during the inspection. Panel discussions included adding into the scope of the Maintenance Rule the Decay Heat Removal System and the Cooling Towers. There was a good discussion of the issues and adequate participation from all panel members. The meeting was conducted in accordance with procedure 40AC-ENG-020-0S.

c. Conclusions

Based on the review of the above sampled SSCs, it appeared the licensee's approach in performance of risk ranking for the Maintenance Rule was adequate. The licensee's use of performance criteria for reliability and unavailability, although different from what was assumed in the PRA, did not adversely affect the total plant risk. The failure to perform a sensitivity analysis when initially establishing reliability performance criteria was considered a weakness. The failure to perform additional risk ranking using the Maintenance Rule performance criteria new data was considered a minor weakness. A violation was identified for failure to establish adequate performance criteria for SSC risk significant functions.

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 was required to be performed at least one time during each refueling cycle, not to exceed 24 months between evaluations. The inspectors reviewed procedure 40AC-ENG-020-0S, MAINTENANCE RULE (10 CFR 50.65) IMPLEMENTATION AND COMPLIANCE, Revision 1, which implemented the licensee's commitments regarding periodic evaluations, and held discussions with the Maintenance Rule coordinator who was responsible for preparing Maintenance Rule periodic assessments as approved by the Engineering Manager. The inspectors also reviewed the Maintenance Rule Initial Periodic Assessment for the period May 12, 1994 to July 1, 1996.

b. Observations and Findings

The licensee's process regarding periodic evaluations of the Maintenance Rule duplicated the words of the Maintenance Rule itself with little elaboration. The elaboration that was provided was vague and general in nature, and depended on the experience and training of the personnel involved to assure the continuum of a quality product.

The Maintenance Rule Initial Periodic Assessment reported the following problems relating to input data:

- Availability and unavailability determinations of SSCs have not been standardized.

- Data was trended on a monthly basis, but the data had not been placed in tabular or graphical form on a consistent basis.

c. Conclusions

The licensee's procedures for performing the periodic evaluation met the requirements of the Maintenance Rule. The Maintenance Rule Initial Periodic Assessment for the period May 12, 1994, to July 1, 1996, issued just prior the July 10, 1996 regulatory implementation date of the Maintenance Rule, was considered a positive initiative for implementation of this evaluation process.

M1.4 Balancing Reliability and Unavailability

a. Inspection Scope (62706)

Paragraph (a)(3) of the Maintenance Rule also 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 inspectors reviewed the plans and procedures the licensee had established to ensure this evaluation was completed as required by the Maintenance Rule. The inspectors also met with the Maintenance Rule coordinator, System Engineers, and representatives of the expert panel to discuss the licensee's methodology for balancing.

b. Observations and Findings

The team reviewed the licensee's process for balancing function reliability and unavailability. The requirements for balancing were contained in Administrative Procedure 40AC-ENG-020-0S. The licensee's approach consisted of monitoring function performance against the established function performance criteria. The process considered a function balanced if the performance criteria were met.

As stated in Section M1.2, the licensee had not adequately established performance criteria for several risk significant SSC functions. Therefore, at the time of the inspection, the team concluded th- e licensee could not have balanced reliability and unavailability for those funct

c. Conclusions

The team concluded that the licensee's approach to balancing reliability and unavailability was adequate. However, since the licensee had not established adequate performance criteria for several risk significant SSC functions, balancing reliability and unavailability for those functions would not be possible.

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 should 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 expert panel members, plant operators, and work schedule dispatchers.

b. Observations and Findings

The team reviewed the licensee's process and performance regarding their risk assessment of removing equipment from service. The licensee had two separate processes for evaluating risk.

The licensee implemented the requirements to assess the impact on plant safety when removing equipment from service into Administrative Procedure 90-AC-OAP-002-0S, SCHEDULING MAINTENANCE, Revision 0. The procedure required the use of a pre-evaluated maintenance risk assessment matrix that identified combinations of

risk significant equipment that were proposed to be removed from service. The matrix contained various equipment maintenance configurations which had been quantitatively evaluated (by the licensee's PRA organization) and addressed operations during power operation and forced outages. The matrix was used by work schedule dispatchers and plant operators to ensure that the proposed scheduled maintenance had been previously evaluated to be acceptable from a risk management perspective. Guidance was provided that directed the operations/work scheduling staff to contact the PRA group prior to entering configurations (for risk significant SSCs) not specifically addressed by the matrix.

The team reviewed the matrix and identified some weaknesses. The risk matrix was deficient because it did not include all of the risk significant systems (EHC and Outside Structure Heating, Ventilation and Air Conditioning) identified in the licensee's Maintenance Rule program. Further, the matrix did not explicitly address the additional risks which could be incurred when conducting maintenance associated with non-risk significant equipment. Combinations of low risk SSCs removed from service may place the plant in a risk significant configuration. (The matrix covered only combinations of risk significant equipment.) In addition, the procedure contained limited weak guidance regarding the actions needed following an emergent equipment failure. The procedure did not require an evaluation of the risk associated with the failure and the maintenance activities in progress. The procedure directed operators to restore equipment to service according to the highest Risk Achievement Worth (RAW) value for the function. However, that RAW values contained in the procedure were based on a single function being out of service. This may lead operators to set function restoration priorities without proper consideration of risk significance.

The team identified a strength in the risk assessment of plant configurations. It was determined that the licensee had conducted extensive calculations to support the matrix approach. The inspectors were unable to perform direct independent verification of the calculations; however, it was noted that the licensee had conducted an appropriate level of review. The team reviewed a sample of previous plant configurations since the implementation date of the Maintenance Rule. They did not identify periods where the plant was operating in a high risk configuration or had deviated from procedural requirements.

The licensee implemented a separate shutdown safety assessment (SSA) process for planned outages. The SSA took into account the need to maintain certain critical safety functions during shutdown operations. These functions included reactivity control, electrical power, inventory control, containment integrity, and decay heat removal. The process allowed outage planners to schedule maintenance activities in a manner that would ensure the availability of the critical safety functions by redundant SSCs.

c. Conclusions

The team identified several process weaknesses regarding the licensee's assessment of the safety impact when removing SSCs from service for monitoring and preventive maintenance. The omission of two risk significant functions from the matrix, the lack

of assessments for non-risk significant SSC function combinations, and misleading guidance regarding priorities following emergent failures were examples of these weaknesses.

The licensee's systematic approach to the development of the matrix was considered a strength. The licensee's process for ensuring that critical safety functions were available during planned outages was good. The overall approach to assessing the risk impact of maintenance activities was considered adequate.

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 the SSCs are capable of fulfilling their intended functions. The Maintenance Rule further requires goals to be established commensurate with safety and industry-wide operating experience be taken into account, where practical. Also, when the performance or condition of the SSC does not meet established goals, appropriate corrective action shall be taken. The team reviewed the systems and components listed below 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 goal(s), or when a SSC experienced a MPFF.

The team reviewed program documents and records for 5 systems or components the licensee had placed in the (a)(1) category in order to evaluate this area. The team also discussed the program with the licensee management, the Maintenance Rule coordinator, system engineers, and other licensee personnel.

b. Observations and Findings

b.1 Emergency Diesel Generator - System 1R43

The inspector verified that the licensee had implemented goal setting and monitoring as required by paragraph (a)(1) of the Maintenance Rule for Emergency Diesel Generator "1B" (EDG). The 1B EDG on Unit 1 had exceeded its performance criteria for reliability (criteria was ≥ 95%) which placed the Emergency Diesel Generator "1B" as (a)(1) equipment. The remaining EDGs were classified as (a)(2) equipment.

The licensee elected early implementation of the Maintenance Rule for EDGs and associated support equipment. This was accomplished by implementing the provisions of the Maintenance Rule and Regulatory Guide 1.160 for these SSCs prior to July 10, 1996. The inspectors determined that the licensee has considered safety in establishment of monitoring and goals for these SSCs. Corrective actions are appropriate. The system engineer was knowledgeable of assigned systems and was

proactive in development and implementation of corrective actions. The system engineer had actively participated in establishment of performance criteria and goals for the EDGs and EDG Governors.

Additionally, the inspector determined that the licensee had adequately addressed 10 CFR 50.63 Station Blackout Maintenance Rule requirements and that these requirements had been implemented into the EDG performance criteria. The licensee had committed to a target EDG reliability value of 95% and a availability of 98%, which was used as a basis for performance criteria for EDG reliability under the Maintenance Rule. Target reliability values for EDG start demands were also incorporated into the EDG performance criteria.

b.2 Condensate/Feedwater System , Unit 2 - SYSTEM 2N21

The Unit 2 condensate/feedwater system exceeded its capability criteria of ≤ 4 failures in a 36 month period for reliability when it experienced five functional failures between April 30, 1994, and April 24, 1996. The causes of the failures were a stuck valve, coupling between pump and motor broke due to mis-alignment, transformer failed, flange leak, and vent line failure. The licensee placed the system in the (a)(1) category in June 1996, and established a goal of zero capacity losses > 20% before October 1997. To date, the licensee has experienced zero failures on this system since it was placed in (a)(1) category. The licensee's evaluation of the subject failures determined none of the failures represented MPFFs. The inspectors noted the licensee was using plant level performance criteria for this system which was considered risk significant. This issue is addressed in Section M1.2.b.2.

b.3 Traveling Screens/Trash Rakes, Unit 1 - System W33

The licensee had experienced three MPFFs on the Unit 1 Traveling Screens, during the period January - February 1994, which resulted in the screens being placed in (a)(1) status. At this point in time, the licensee established "Goals" as documented in the System Report. The licensee's undated "living" System Report identified six corrective actions, two of which were completed September 7, 1995, one was completed date not stated, and the remaining three are to be completed at a date to be determined. The System Report erroneously identified corrective actions as "Goals". The notion of "Goals" as intended in 10 CFR 50.65 has to be inferred from the System Report, which are ≤ 1 MPFF for a period of one year. (It should be noted that this "Goal" is less conservative than the Performance Criteria which is ≤ 1 MPFF for a period of three years)

Three more MPFFs occurred on the Unit 1 Traveling Screens during the period October 1995 - January 1996 (DC 9504354, DC9505505 and 9600257) .vhile still in (a)(1) status. Corrective action was limited to the immediate problem. No added monitoring, additional surveillances, or added PM tasks were implemented and no new goals were established as required by procedure 40AC-ENG-020-0S, Revision 0, dated June 1, 1995 and Revision 1, dated September 23, 1996, MAINTENANCE RULE (10 CFR 50.65) IMPLEMENTATION AND COMPLIANCE, Paragraphs 8.6.3 and 8.7.1. When the fourth MPFF occurred on October 2, 1996, the licensee discovered

the three previous MPFFs, recommended corrective actions to be taken and a new goal established, documented in Root Cause Analysis Summary Report No.C09604408, as required by 40AC-ENG-020-0S. The inspectors reviewed the proposed corrective action for these failures, and the goals and monitoring under the (a)(1) status, and concluded that the corrective action, goals, and monitoring were appropriate except as noted above. At the time of this inspection, Root Cause Analysis Summary Report No. C09604408 was still in concurrence routing and had not received final approval for implementation. As a result of the failure to recognize the procedural requirements, the licensee failed to implement additional monitoring, additional surveillance, add PM tasks, or the establishment of new goals, for approximately ten months (December 1995 to October 1996). The period July 10, 1996 to October 2, 1996 is within the regulatory envelope.

10 CFR 50.65 (a)(1) requires, in part, that holders of an operating license shall monitor the performance or condition of structures, systems, or components, against licensee-established goals, in a manner sufficient to provide reasonable assurance that such structures, systems, and components, within the scope of the Maintenance Rule, are capable of fulfilling their intended functions. When the performance or condition of a structure, system, or component does not meet established goals, appropriate corrective action shall be taken. 10 CFR 50.65 (a)(2) requires, in part, that monitoring as specified in paragraph (a)(1) is not required where it has been demonstrated that the performance or condition of a structure, system, or component is being effectively controlled through the performance of appropriate preventative maintenance, such that the structure, system, or component remains capable of performing its intended function.

Hatch Nuclear Plant Administrative Control Procedure, Document Number 40AC-ENG-020-0S, MAINTENANCE RULE (10 CFR 50.65) IMPLEMENTATION AND COMPLIANCE, Revisions 0 and 1, established procedure for implementation of the requirements of 10 CFR 50.65 (a)(1) and (a)(2). Paragraph 8.6.3 required, in part, the system engineer perform a cause determination, evaluate generic common cause implications, include events impact on performance criteria, document the event using the deficiency process, and implement additional monitoring, surveillance or PM tasks, as required, when an event occurs which impacts system/function performance criteria. Paragraph 8.7.1 required, in part, establishment of goals when performance criteria is not met or a repetitive MPFF occurs. A violation was identified for failing to follow the requirements of 40AC-ENG-020-0S for three MPFFs which occurred on the Unit 1 Traveling Screens/Trash Rake System before July 10, 1996. The violation is applicable for the period July 10 to October 2, 1996. This item is identified as Violation ***50-321, 366/96-12-03 (Failure to Follow Procedure for Implementation of the Maintenance Rule)***.

The inspectors asked the licensee what actions they had taken: to determine the cause of the failure to follow procedure 40AC-ENG-020-0S; to determine the extent of the problems resulting from these failures and possibly other examples of similar procedure violations; and to prevent recurrence of similar circumstances. The licensee's response was no actions were taken. As a result of the inspectors questions, the licensee documented the procedural violations with a deficiency card.

b.4 Residual Heat Removal - System E11

The licensee's original evaluation placed the Residual Heat Removal (RHR) system in the (a)(2) status. On May 19, 1995 the 2E11-F015B RHR LPCI injection MOV motor failed and was identified as the second demand failure in two cycles. Failing to meet the reliability performance criteria of two demand failure in two cycles, the Unit 2B loop of LPCI and Shut Down Cooling were declared (a)(1) status. The remainder of the RHR system remained under the (a)(2) status.

The inspectors reviewed the proposed corrective action for these failures, and the goals and monitoring under the (a)(1) status, and concluded that the corrective action, goals, and monitoring were appropriate.

b.5 Primary Containment Chilled Water (Unit 2) - System 2P64

The Primary Containment Chill Water System (2P64) was assigned to Maintenance Rule category (a)(1) due to exceeding the performance criteria of more than 6 trips in 36 months. Only the drywell cooling non-safety related function was considered under system 2P64. However, loss of the chillers and inability to cool the containment was considered risk significant by the expert panel in that it could require a manual plant shutdown, or if containment pressure becomes high enough, it could result in an Engineered Safeguards Features (ESF) signal on high containment pressure. The system is comprised of two 100% capacity trains of chillers and associated pumps and equipment which feed chilled water through a common header to be distributed in the drywell. One train is normally operating. In the event of a trip, the other train will auto start.

The inspectors reviewed the system assessment report, Maintenance Rule monthly status reports, maintenance work orders, deficiency cards, significant operating reports and additionally interviewed the Maintenance Rule coordinator, system engineer, and performance team technician to evaluate the implementation of the Maintenance Rule.

The root cause for multiple equipment problems was identified in 1993 as aged, obsolete equipment and controls. Corrective action involved the submittal of a modification request to the Configuration Control Board for system modification in October 1993, and more rigorous monitoring of the equipment was conducted using diagnostic techniques. Due to the need to address environmental issues for chillers, the modification was being re-evaluated. The monitoring process identified relay and pump impeller problems which were repaired. These actions, while identified as goals, were actually corrective actions.

In the January to February 1995 time frame the chillers tripped three times while trying to identify the problems. In February 1995 the chillers were moved to the a(1) status due to exceeding the performance criteria of more than 6 trips in 36 months. Corrective actions were thorough and the chillers operated without tripping from

March 1995 to May 1996. The licensee established a new goal of less than or equal to 1 chiller trip before November 1997 in the monthly status reports but the goal was not reflected in the scoping document when the inspection ended.

In review of this system the inspectors found it necessary to perform extensive document reviews and hold multiple interviews with plant personnel to understand problems and corrective actions associated with this system. The fragmented documentation associated with problems and corrective actions was identified as a weakness.

c. Conclusions

The licensee considered safety in establishment of goals and monitoring for systems and components reviewed. A violation was identified for failure to follow procedure for implementation of the Maintenance Rule associated with lack of identification of MPFFs for the Unit 1 Traveling Screens/Trash Rake System. A weakness was identified associated with fragmented documentation for review of problems and corrective actions for the Unit 2 Primary Containment Chilled Water System. The licensee adequately addressed 10 CFR 50.63 Station Blackout Rule requirements and these requirements had been implemented into the EDG performance criteria.

M1.7 Preventative 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 a SSC is being effectively controlled through the performance of appropriate preventative 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 preventative maintenance was being performed, such that the SSCs remain 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 was established, and that corrective action was taken when SSCs failed to meet performance criteria, or when a SSC experienced a MPFF.

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

b. Observations and Findings

b.1 High Pressure Coolant Injection (HPCI) - System 1E41

Review of the HPCI System determined that appropriate performance criteria had been established at 96% availability based on a 36 month rolling schedule and monitoring was being accomplished against those criteria. HPCI was consistently available more than 98% of the time. The licensee also established performance criteria based on less than 2 MPFF in a 36 month period. During the last 36 months only 1 MPFF was identified by the licensee. Review of the problems associated with the system determined that appropriate corrective actions had been taken for failures.

The inspectors interviewed the system engineer for the HPCI system and determined he has held the job for approximately 6 years and was very knowledgeable of the HPCI system and application of the Maintenance Rule on the HPCI system.

b.2 DC Electrical - System R42

Review of the DC Electrical System determined that performance criteria had been established and monitoring was being accomplished against those criteria. However, the performance criteria was determined to be inadequate. This issue is addressed in Section M1.2.b.2 of this report. 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.

b.3 Plant AC Electrical - System R20

Review of the Plant AC Electrical R20 determined that performance criteria had been established and monitoring was being accomplished against those criteria. However, the performance criteria was determined to be inadequate. This issue is addressed in Section M1.2.b.2 of this report. 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.

b.4 Primary Containment - System T23

Review of the Primary Containment system (T23) indicated that the licensee was using Option B of 10 CFR 50, Appendix J as the monitoring and performance criteria. The licensee stated that Appendix J provides an adequate monitoring process and specifies penalties for valve leakage failure. The inspector agreed that Appendix J prescribes a monitoring process but does not establish a standard when a system should be upgraded from a(2) to A(1) status. For instance the failure to close on demand of valve E41-FOO3, steam admission valve on the HPCI system, rendered the HPCI system inoperable and was counted as unavailability for that system. However, the failure of the valve to close was not evaluated under the Containment System as a MPFF. The licensee had initially established performance criteria for the containment as 4 or less MPFFs per 36 months. This criteria was later withdrawn and

no new performance criteria established. NUMARC 93-01, paragraph 9.3.2 states that performance criteria for evaluating SSCs are necessary to identify the standard against which performance is to be measured. Contrary to this, performance criteria had not been established for the T23 system. Regulatory aspects of these issues were generically addressed in Section M1.2.b.2.

The inspector reviewed leak rate data and trends and concluded that the licensee has a well established leak rate program.

b.5 Electro-hydraulic Control - System N32

A system report issued in January 1995 indicated problems with contaminated fluid causing the formation of a black gel type substance which resulted in blockage of strainers to the turbine control, combined intercept, and stop valve servo valves and resulted in a power reduction. The licensee has undertaken extensive and appropriate corrective actions to upgrade the performance of the EHC system.

The inspectors reviewed the performance of the EHC system for 1996 to evaluate the implementation of the Maintenance Rule. In January 1996, a reactor shutdown occurred due to clogged strainers in the control servo valves. The licensee did not consider this problem to be a MPFF in that the fluid chemistry was rigorously maintained within vendor recommendations and specifications.

On April 30, 1996, a reactor trip on Unit 1 from 11% rated thermal power occurred when the licensee used procedure 34SO-N32-001-1S, EHC HYDRAULIC SYSTEM, to realign the EHC system in order to repair leaks. The procedure did not reflect actual plant construction configuration and resulted in isolation of fluid to the bypass valves which subsequently failed closed and caused the trip. Based on their administrative procedure, the licensee did not consider this event a MPFF. The inspectors reviewed administrative control procedure 40AC-ENG-020-0S, MAINTENANCE RULE (10 CFR 50.65) IMPLEMENTATION AND COMPLIANCE, Revision 1. The inspectors noted that Attachment 7, page 4 of 12 of 40AC-ENG-020-0S provided guidance that indicated operator error during valve operations for support of maintenance evolutions was not an MPFF. NUMARC 93-01 defined MAINTENANCE, in part, as extending to all supporting functions for the conduct of activities to correct actual or potential degraded conditions. The inspectors determined that the operational evolution being conducted to support the maintenance activity was considered MAINTENANCE in the scope of the Maintenance Rule, and the event should have been classified as a MPFF. Clarification of the definition of MAINTENANCE as it relates to support activities is an industry issue. An inspector followup item was identified, **50-321, 366/96-12-04 (Followup on Action to Clarify The Definition of MAINTENANCE for Implementation of Maintenance Rule Requirements).**

In May 1996 the reactor was shut down to fix leaks in the EHC system. The shut down was a management decision due to potential problems that might develop. The inspectors agreed with the licensee's MPFF determinations for the January and May shutdowns.

b.6 Structures-Control Building

Based on interviews with the cognizant system engineer and licensee's civil engineers, the team determined the licensee completed a baseline structural inspections of all required structures in the Maintenance Rule scoping document except the Unit 2 Turbine Building and Unit 2 Reactor Building. All baseline inspections are scheduled to be completed in the Spring of 1997. Periodic surveys will then be performed throughout the life of the plant. The inspection attributes used in the walkdowns for baseline inspections and the periodic surveys of structures were based on applicable design criteria. Discrepancies identified during walkdown inspections were identified in the Structural Monitoring Baseline Inspection Report, dated September 1996. Evaluations were made by the licensee that concluded the identified conditions were not structural failures. Photographs were taken of the findings in order that comparisons ca.. be made of conditions during subsequent inspections. The licensee used knowledgeable and experienced civil engineers to perform the structural inspections. A review of the licensee's baseline inspection for the Unit 1 Control Building identified 54 abnormalities from the Control Building baseline inspection. Photographs were taken for subsequent comparison.

The inspector walked down the Control Building from the lowest elevation up, including the cable spread room, in order to observe the condition of the concrete and steel structures. Although some minor surface cracking in the concrete walls and ceilings was observed, the inspector concluded from visual inspections that the building appeared structurally sound. No unacceptable conditions were noted. Further, the inspector was accompanied by the control building system engineer who was very knowledgeable and qualified to perform structural evaluations.

The team determined that the licensee has plans to establish a performance criteria that any unacceptable structure and structural components that are not capable of performing their intended function would constitute a functional failure and move the structure from the (a)(2) to (a)(1) category. The issue of performance criteria for (a)(2) structures is an industry wide problem and has been identified before by NRC. The reason for the problem is that there is presently no industry guidance in this area. An Inspector Followup Item was identified **50-321, 366/96-12-05 (Followup on Licensee Actions to Provide Performance Criteria for Structures After Industry Resolution of this Issue)**.

c. Conclusions

The team concluded performance criteria was established, industry-wide operating experience was considered, where practical, appropriate trending was being performed, and corrective action was taken when SSCs failed to meet performance criteria, or when a SSC experienced a MPFF for most of the SSCs reviewed. An inspector followup item was identified for followup on action to clarify the definition on MAINTENANCE for implementation of Maintenance Rule requirements. An inspector followup item was identified for followup on licensee actions to provide performance criteria for structures after industry resolution of the issue.

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 inspectors performed walkdowns of selected portions of the following systems and plant areas, and observed the material condition of these SSCs.

- Emergency Diesel Generators
- High Pressure Coolant Injection
- Traveling Screens/Trash Rakes
- Residual Heat Removal System
- DC Electrical System
- Plant AC Electrical
- Other Balance of Plant Areas
- Unit 2 Safety-Related Pump Rooms
- Remote Shutdown
- Structures (Control Building)
- Plant Yard Areas

b. Observations and Findings

Housekeeping in the general areas around system and components was acceptable. Piping and components were painted, and very few indications of corrosion, oil leaks, or water leaks were evident. The inspectors observed the inside of selected panels and cabinets and no loose debris, damage, or degraded equipment was noted. Areas noted to be in very good housekeeping condition were the emergency diesel generator rooms, battery rooms, high pressure coolant injection rooms, and plant yard areas.

During the walkdown inspection of the Service Water intake structure, the inspectors noted the following conditions:

- The majority of the insulation associated with the Traveling Screens was damaged/crushed. Some insulation was missing.

- There were a number of fasteners missing/loose on the guards and covers on the Traveling Screens.

- Several electrical cabinets doors were not properly secured such that the weather stripping/environmental seal was not compressed thereby potentially compromising the integrity of the components within. The licensee attempted to properly secure the cabinets. One closure device on cabinet 1H21-P278 was sprung and needed adjustment.

- Both Unit 1 Service Water strainers were leaking. To address this item the licensee issued Deficiency Card No. C09604639 to address the leak on Strainer 1P41D103B.

- A flange nut on Valve 1W32F002B exhibited a less than full thread engagement.

During the walkdown inspection of the Plant DC Electrical areas, the inspectors noted the following conditions:

- Verdigris on a number of terminals on the Unit 2 Cooling Tower Batteries 2R42S005.

- An accumulation of battery acid crystals was noted under the Unit 2 Battery 2R42008.

During the walkdown inspection of the Plant AC Electrical areas, the inspectors noted the following conditions:

- Approximately ten examples of missing structural fasteners and loose panel closure devices on electrical cabinets.

- Apparent startup transformer parts were noted laying adjacent to a start up transformer.

c. Conclusions

Plant material condition observed during walkdowns was generally good. Preservation of equipment by painting was considered to be good. Several areas were noted to be in very good housekeeping condition. The housekeeping/material condition discrepant items noted with the exception of the verdigris on the Unit 2 Cooling Tower Batteries, were apparently items of long standing, and indicative of lack of attention to detail on the part of operations and engineering personnel who make frequent tours of the areas.

M7 Quality Assurance in Maintenance Activities

M7.1 Licensee Self Assessment

a. Inspection Scope (62706)

The inspector reviewed two audits of the licensee's implementation of the Maintenance Rule. Audit Report Number 96-MR-1 was conducted between January 29, and March 5, 1996; and Audit Report Number 96-SA-12 was conducted between August 26, and October 14, 1996. The inspector also held discussions with Quality Assurance personnel and supervision, and other licensee management relating to Audits.

b. Observations and Findings

The purpose of Audit 96-MR-1 was to determine if Hatch Nuclear Plant would be in compliance with the Maintenance Rule by July 10, 1996. The team for 96-MR-1 was comprised of personnel from Hatch, Farley, and Vogtle Nuclear Plants. The purpose of Audit 96-SA-12 was to determine if the Maintenance Rule had been effectively implemented at Hatch Nuclear Plant. Both audits concluded the Maintenance Rule had been implemented at Hatch Nuclear Plant as required by 10 CFR 50.65, and each audit identified a finding. Audit 96-MR-1 identified a finding associated with failure to follow the requirements of Hatch Nuclear Plant Administrative Procedure 40AC-ENG-020-0S, which was the Maintenance Rule implementing procedure. Audit 96-SA-12 identified a finding associated with a maintenance activity which was not a part of the Maintenance Rule program.

During review of the Audit Checklists attached to each audit report, the inspector noted that several deficiencies or findings were identified without formal documentation of the deficiencies or findings. For example, Audit 96-MR-1 had 19 audit checklist pages attached. Page 1 discussed a finding associated with trending of an EDG goal, page 2 discussed a trending issue for the RPS, page 3 identified a documentation issue associated with the basis for goals or changes to goals, pages 5 and 6 identified deficiencies associated with system status monitoring, and page 11 identified a problem associated with consistency of documentation during review of industry operating experience. However, the items discussed above were not identified as audit findings, nor entered into the licensee's corrective action program as a deficiency.

Audit 96-SA-12 had 28 audit checklist pages attached. Page 6 noted problems with readability of procedure 40AC-ENG-020-0S, page 12 noted a weakness in determination of repetitive MPFFs, pages 13 and 14 described a condition where system engineers may not be following procedural requirements, and page 17 noted several issues associated with determination of repetitive MPFFs. Again, the items discussed above were not identified as audit findings, nor entered into the licensee's corrective action program as a deficiency.

The inspector discussed his observations with a Safety Audit and Engineering Review (SAER) group supervisor and the lead auditor. The auditor indicated that he included too much information in the audit notes and the supervisor did not indicate that the informal manner in which deficiencies or findings were communicated was a problem. The inspector specifically stated that the item discussed above associated with system engineers not following administrative procedure was a significant issue. The inspector informed the licensee that their lack of formal documentation of findings and issues discussed in audit checklists was considered a weakness.

c. Conclusions

The team concluded both audits provided good observations of areas associated with Maintenance Rule implementation. However, many findings or deficiencies discussed in attached audit notes, were not identified as findings or entered into the licensee's corrective action program. This concern was identified as a weakness.

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/or parameters to the UFSAR descriptions. While performing the inspections discussed in this report, the inspectors reviewed the applicable portions of the UFSAR that related to the areas inspected. The inspectors verified that the UFSAR wording was consistent with the observed plant practices, procedures and/or parameters.

E4 Engineering Staff Knowledge and Performance

E4.1 Engineer Knowledge of the Maintenance Rule

a. Inspection Scope (62706)

The inspectors interviewed licensee system owners (system engineers) for the structures, systems, and/or components 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 knowledgeable of their systems, proactive in corrective actions, and actively participated in Maintenance Rule development. For example, the EDG system engineer was knowledgeable of assigned systems and was proactive in development and implementation of corrective actions. Also, system engineers for the EDGs, HPSI, and DC Electric demonstrated an ownership for their systems that was noteworthy.

Some system engineers interviewed were responsible for five to seven systems. When asked the system engineers stated that they were not overloaded; however, several indicated that their problem systems got the lion's share of their time while the others got what time was left. One system engineer indicated that missed MPFFs were the result of too many systems.

c. Conclusions

The system engineers were knowledgeable of their systems and implemented the Maintenance Rule requirements, for the most part, in a good manner. Also, some system engineers demonstrated an ownership for their systems that was noteworthy.

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 October 25, 1996. The licensee acknowledged the findings presented with exceptions. The licensee stated that based on their review at the time of the exit, they would be denying the violation for failing to include systems within the scope of the Maintenance Rule, as identified by the team. The licensee also denied a potential violation occurred for the example associated with failure to provide adequate procedure for implementation of Maintenance Rule requirements. This issue involved a reactor scram during performance of a procedure to establish system alignment of the Unit 1 EHC System for maintenance. The team leader provided the licensee with additional inspection results in a telephone conversation on November 5, 1996.

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

PARTIAL LIST OF PERSONS CONTACTED

LICENSEE:

S. Ammons, Maintenance Rule Coordinator
J. Betsill, Manager, Operations
C. Coggins, Manager, Engineering Support
J. Dawson, Maintenance Supervisor
P. Fornel, Maintenance Manager
O. Fraser, Safety Audit and Engineering Review Supervisor
K. Fry, Senior Project Engineer
R. Glisson, Plant Engineering Supervisor
J. Hammonds, Regulatory Compliance Supervisor
W. Holt, Central Scheduling Supervisor
J. Lewis, Manager, Training and Emergency Preparedness
T. Metzles, Acting Safety Audit and Engineering Review Manager
T. Moore, Assistant General Manager, Plant Support
P. Roberts, Manager, Outage and Planning
J. Robertson, Jr., Acting Manager, Plant Mod & Maintenance Support
P. Wells, Assistant General Manager, Plant Operations

NRC:

J. Canady, Resident Inspector
E. Christnot, Resident Inspector
R. Correia, Section Chief, NRR
J. Jaudon, Deputy Director, DRS
J. Moorman, Acting Senior Resident Inspector
D. Taylor, Reactor Engineer, NRR

LIST OF INSPECTION PROCEDURES USED

IP 62706 Maintenance Rule

LIST OF ITEMS OPENED

50-321, 366/96-12-01	VIO	Failure to Include All Structures, Systems, and Components in the Scope of the Maintenance Rule as Required by 10 CFR 50.65 (b) (Section M1.1)
50-321, 366/96-12-02	VIO	Failure to Establish Adequate Performance Criteria for SSC Risk Significant Functions (Section M1.2.b.2)
50-321, 366/96-12-03	VIO	Failure to Follow Procedure for Implementation of the Maintenance Rule (Section M1.6.b.3)
50-321, 366/96-12-04	IFI	Followup on Action to Clarify the Definition of MAINTENANCE for Implementation of Maintenance Rule Requirements (Section M1.7.b.5)
50-321, 366/96-12-05	IFI	Followup on Licensee Actions to Provide Performance Criteria for Structures After Resolution of this Issue (Section M1.7.b.6)

LIST OF ACRONYMS USED

CDF	-	Core Damage Frequency
CFR	-	Code of Federal Regulations
DC	-	Deficiency Card
EDG	-	Emergency Diesel Generator
EHC	-	Electro-hydraulic Control
ENG	-	Engineering
ESF	-	Engineered Safeguards Feature
HPCI	-	High Pressure Coolant Injection
IFI	-	Inspector Followup Item
LER	-	Licensee Event Report
LERF	-	Large Early Release Frequency
LOCA	-	Loss of Coolant Accident
LPCI	-	Low Pressure Coolant Injection

MOV	-	Motor Operated Valve
MPFF	-	Maintenance Preventable Functional Failure
NRC	-	Nuclear Regulatory Commission
NRR	-	Office of Nuclear Reactor Regulation
NSAC	-	Nuclear Safety and Compliance
NUMARC	-	Nuclear Management and Resources Council, Inc.
P.E.	-	Professional Engineer
PM	-	Preventative Maintenance
PRA	-	Probabilistic Risk Assessment
RAW	-	Risk Achievement Worth
RHR	-	Residual Heat Removal
RO	-	Reactor Operator
RPS	-	Reactor Protection System
SAER	-	Safety Audit and Engineering Review
SRO	-	Senior Reactor Operator
SSA	-	Shutdown Safety Assessment
SSC	-	Structure, System, or Component
STA	-	Shift Technical Advisor
UFSAR	-	Updated Final Safety Analysis Report
VIO	-	Violation

LIST OF PROCEDURES RE /IEWED

ADMINISTRATIVE CONTROL PROCEDURES

- 40AC-ENG-020-0S, MAINTENANCE RULE (10 CFR 50.65) IMPLEMENTATION AND COMPLIANCE, Revision 1
- 90AC-OAP-002-0S, SCHEDULING MAINTENANCE, Revision 0
- 10AC-MGR-004-0S, DEFICIENCY CONTROL SYSTEM, Revision 10
- AG-MGR-27-0687N, ROOT CAUSE ANALYSIS, Revision 3

HATCH NUCLEAR PLANT 10 CFR 50.65 MAINTENANCE RULE SCOPING MANUAL, Revision 1

MAINTENANCE RULE MONTHLY STATUS REPORT (AUGUST) dated September 20, 1996, LOG: LR-ENG-006-0996

MAINTENANCE RULE MONTHLY STATUS REPORT (SEPTEMBER) dated October 20, 1996, LOG: LR-ENG-004-1096