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OFFICE OF NUCLEAR REACTOR REGULATION

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Facility Name: Cooper Nuclear Station

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EXECUTIVE SUMMARY

An NRC Operational Safety Team Inspection (OSTI) was conducted from November 1 through November 19, 1993 led by the Special Inspection Branch of the Office of Nuclear Reactor Regulation (NRR) at the Cooper Nuclear Station. The nine member inspection team consisted of staff members from NRR and Region IV, and two consultants. The team evaluated the functional areas of operations, maintenance, management oversight, surveillance and testing, health physics, fire protection, safety assessment, and engineering and technical support.

The team concluded that, on the basis of its inspection findings, there was no evidence of significant demonstrated improvements in plant performance from that observed during NRC inspection 93-17 that assessed corrective action. The team noted both strengths and weaknesses and brought these to the attention of the licensee during the inspection. Although there was no finding of immediate safety significance that would preclude continued plant operations, the individual team findings, when viewed collectively, were indicative of an insufficient level of management involvement in the routine operations of the facility. The team determined that major contributors to the findings, several of which had been previously identified by the NRC and/or the licensee, were a lack of a questioning attitude in assessing station problems and a weakness in the communication of management's expectations to the plant staff.

The team identified the following examples of training program deficiencies:

a. Quarterly fire brigade training was not conducted as required for the applicable security force members of the brigade in accordance with technical specifications and Appendix R to 10 CFR 50.

b. Shift technical advisors on watch did not meet the training qualification requirements contained in technical specifications.

c. Designated licensee personnel were not trained to recognize fire barrier deficiencies. This resulted in the licensee's failure to identify inoperable fire doors. In response to the team's concerns, at least 20 fire doors were declared inoperable.

The team identified the following examples in which licensee personnel failed to follow procedures or used inadequate procedures:

a. Preventive maintenance task cards for the emergency diesel generator fuel oil transfer pump did not provide adequate instructions for the performance of the surveillance. Therefore, the test could not be accomplished with the existing procedure.

b. The required weekly preventive maintenance tasks for the control room heating and air conditioning isolation dampers were not included in the preventive maintenance program.

c. The procedure that specified the criteria for fire door technical specification surveillance inspections did not provide adequate instruction to the craft. As a result, multiple operability deficiencies in fire doors were allowed to accumulate without corrections.

d. A licensed operator manipulated two valves outside the guidance of a standby liquid control pump surveillance test procedure.

The team identified problems in the engineering modification and configuration management area. Some examples that indicated a need for stronger controls in this area follow.

a. There were a number of uncontrolled modifications performed on thermal insulation without undergoing the required reviews and controls associated with the formal modification process. This resulted in a condition where thermal insulation on several safety-related systems did not conform with the original installation specifications and the changes were not controlled within the configuration management system.

b. Residual heat removal drain piping was modified through a maintenance work order rather than being processed through the plant modification program. Some of the piping in question was part of the system pressure boundary.

The team noted that many of the inspection findings, including the following examples, had been previously identified by the licensee, but had not been successfully corrected to prevent recurrence.

a. For the past several years, the licensee identified problems with shift technical advisor training but had not adequately corrected the problems.

b. Fire brigade training deficiencies were identified in the past but continued to exist.

c. Numerous examples where the site had failed to follow procedure or were using inadequate procedures.

d. Fire door inspections had been performed in the recent past, but the improper method of inspecting the doors had not been identified.

The team identified areas of strengths were switch yard control, health physics program, system and plant material conditions, and the plant being operated with a black board.

1.0 INSPECTION SCOPE

From November 1-5 and 13-19, 1993, the U.S. Nuclear Regulatory Commission (NRC) conducted an operational safety team inspection at Cooper Nuclear Station (CNS) to assess the safe operation of the facility. This performance-based inspection effort concentrated on the conduct of plant operations and the overall effectiveness of the licensee's support for plant operations. The team of nine inspectors observed over 48 hours of on-site operation-related activities including backshift inspections. In addition, the team inspected the areas of maintenance, management oversight, safety review, surveillance and testing, health physics, fire protection, safety assessment, and engineering and technical support. During the inspection, the team also contacted members of the licensee's staff to discuss issues and ongoing activities.

The inspection was conducted in accordance with the guidance of Inspection Procedure 93802, "Operational Safety Team Inspection (OSTI)," dated November 27, 1989. The details of the inspection are given below. Appendix A lists the management attendees of the exit meeting. Appendix B describes each deficiency noted in the inspection report, and Appendix C lists significant observations made during the inspection.

2.0 INSPECTION DETAILS

2.1 Operations

The team observed plant operations from the main control room and in the plant continuously for over 48 hours and on a routine basis throughout the inspection period. The activities observed included shift turnovers between the licensed and nonlicensed operators, and the conduct of licensed duties by the shift supervisor (SS), control room supervisor (CRS), reactor operator (RO) and station operators (SOs). The team conducted several tours with the SOs and plant personnel. The adequacy of plant operating and alarm procedures was reviewed to assess the overall effectiveness in supporting plant operations. Operations and plant staffing was assessed for the ability to respond to potential plant abnormal events. Two system walkdowns were conducted to verify the configuration of systems to design documents and procedures.

2.1.1 Shift Routine

The plant operated at essentially full power throughout the inspection period. Reactor power was decreased on November 2, 1993, for as-low-as-reasonably-achievable (ALARA) considerations while a leak repair activity was conducted in the turbine building heater bay.

The team observed that each operating crew was attentive to control room activities and demonstrated a professional attitude over the control of the plant and shift activities. The SS and CRS effectively minimized potential main control room distractions by authorizing and reviewing clearance orders and work activities through the control room SS work control window. Personnel access to the main control board area was very well controlled by

the CRS and the control room operators. Procedures and plant status aides were appropriately controlled to prevent control board indications from being obscured.

The control room operators were aware of plant status, component conditions, and system configurations. The licensee had been effective in minimizing the number of control room annunciators that were in alarm status. During most of the inspection period the plant was operated with a "black board"; that is, the main control board had no lit or malfunctioning annunciators. The licensee had implemented the use of "red arrows" to readily identify degraded or unreliable annunciators and controllers. The team verified that each "red arrow" was appropriately logged and a work item tracking (WIT) document had been initiated to correct the condition. In no instance was it determined that the equipment affected by the potentially unreliable annunciators or controllers had resulted in adverse challenges to the operators or the plant. The team considered the control of the main control board to be a strength.

The team noted that the licensee had not clearly established its expectations for routine shift activities such as shift turnover and control room logging. There were inconsistencies between operator performance in each of these areas. The adequacy of licensed operator shift turnovers varied greatly between the different operating crews. The plant operating detail provided during some turnovers was only minimal to address the plant status and the subsequent crew briefing did not consistently provide a comprehensive review of planned activities. The level of detail discussed and the interaction with the SOs also varied significantly with each crew. Control room logging activities also were not uniformly implemented. The lack of uniformity is an example of a management weakness in communicating their performance expectations to the plant staff. This weakness is identified as Observation 50-298/93-202-01, Weakness in Communicating Management Expectations.

2.1.2 Plant Tours

The team conducted several tours of the plant to verify the material condition of plant equipment and housekeeping.

The team observed the general housekeeping conditions in readily accessible areas of the plant to be very good. However, areas that were not frequently traveled were not consistently maintained to the standard established in the readily accessible areas of the plant. The general housekeeping conditions on the top of the standby liquid control (SLC) tank and inside the diesel generator fuel oil transfer pump pits were poor. The licensee identified, in Appendix D to the Quality Assurance Program for Operation, Revision 8, for the Updated Safety Analysis Report, that housekeeping would be maintained in accordance with ANSI N45.2.3-1975, "Housekeeping During the Construction Phase of Nuclear Power Plants," and its associated Regulatory Guide 1.39, "Housekeeping Requirements for Water Cooled Nuclear Power Plants." This standard was to be met through the implementation of the housekeeping recommendations through the applicable procedures. The team noted that the housekeeping recommendation, which had been committed to, had not been incorporated into the procedures for the sample of the SLC tank (Chemistry Procedure 8.4, Revision 6, "Routing Sampling Procedure and Liquid/Gas Sample

Points") and the diesel generator fuel oil storage tanks surveillance procedure (6.3.12.3, Revision 16, "Diesel Fuel Oil Quality Test"). The team identified these procedure inadequacies as an example of Deficiency 50-298/93-202-01, Inadequate Procedures.

2.1.3 Control Room Observations

The team noted that operators' responses to annunciators was inconsistent among crews. Certain crews called out the annunciators as the alarms came in. Other crews were observed not to verbally call the alarm. The team noted that the lack of crew interaction for routine, or "expected," annunciators could result in the failure to promptly identify other plant integrated responses. In addition, the shift crew was not briefed on which annunciators would be expected before beginning a surveillance activity. In one instance, a relief operator assumed licensed operator duties without receiving a briefing on the plant status. The operator's duties were restricted to responding to annunciators resulting from ongoing surveillance activities. In another instance, an operator acknowledged an annunciator that appeared to be associated with a reactor core isolation cooling (RCIC) run (Surveillance Procedure 6.3.6.1); however, no further action or assessment was conducted until prompted by the CRS. In a separate instance, an expected reactor half scram was received during a surveillance but the condition was not called out to the crew. Based on the team's concerns, NPPD's management stated that clear guidance as to what action was expected by the crews would be developed and implemented.

2.1.4 Adequacy of Operations Programs and Procedures

The onsite engineering staff was often involved in performing operability determinations and evaluations as requested by plant operations. Operability evaluations were used for matters that require extensive review, whereas operability determinations were used to make a quick 24-hour assessment of the status of a particular component or system. The team reviewed five operability determinations and seven operability evaluations.

The team considered these documents to reflect good engineering efforts to justify the operability status of degraded systems and components. One exception was Operability Determination 93-006. In this case, a startup strainer was found to be installed in the pump suction of the reactor equipment cooling (REC) pump C. This strainer was intended to be temporary but was inadvertently left in place following initial plant startup. The startup strainer in the C loop was removed and examined. The operability determination evaluated the operability of the other three loops, although, at the time, it was not known whether startup strainers were installed in these loops. The operability determination addressed three aspects related to the strainer that was removed: corrosion, plugging, and seismic implications. The operability determination made an implied assumption that startup strainers potentially installed in the other three loops were of the same type, material content, and mesh size as the strainer removed from the C loop. When questioned, the licensee stated that the operability determination had not properly addressed the actual operability basis that had been discussed at the time, specifically that the pump test data had shown no signs of degradation.

The licensee stated that the document would be corrected to reflect this position.

Other concerns with the adequacy of the licensee's operational programs and procedural adherence were identified. A review of the work history for level indicator PC-LI-13 identified that Maintenance Work Request (MWR) 92-0185 was initiated on January 14, 1992, to investigate and repair level indicator PC-LI-13. On January 30, 1992, the SS authorized the performance of work at 8:42 a.m. The work activity included the bench calibration of both level indications, which would render them inoperable. Technical Specification Table 3.2.F, Primary Containment Action E, required that, in the event both channels are inoperable and indication cannot be restored in 6 hours, an orderly shutdown shall be initiated and the reactor shall be in hot shutdown in 6 hours and in a cold shutdown condition in the following 18 hours. A review of the control room logs, which should have documented the entry into a limiting condition for operation (LCO), did not contain any entries identifying that an LCO had been entered or that an orderly shutdown had been initiated any time on January 30 or 31, 1992. It was noted that the post-maintenance test was initiated at 7:23 a.m. on January 31, 1992, and not completed until nearly 6 hours later that day at 1:19 p.m. On the basis of the lack of control room log entries and the MWR work documentation, the team determined that the licensee had not met the requirements of Technical Specification 3.2.F for both channels of torus water level indication being inoperable. This was identified as Deficiency 50-298/93-202-02, Limited Conditions for Operations.

The team noted other deficiencies associated with the work activity. Although the work activity was initiated on January 30, 1992, and completed the following day, the MWR remained open. The equipment was not accepted for operation until February 8, 1993. Subsequent to the completion of the initial work activity, the MWR was again used on July 30, 1992, to correct a problem with the PC-LI-13 alarm card, which was found to be out of calibration. However, the SS did not indicate in the MWR that the subsequent post-maintenance test was authorized. On February 3, 1993, MWR 92-0185 was used to investigate the cause for the level indicator PC-LI-13 reading minus 5.08 cm (2 in.), the entry point for the emergency operating procedures. The reference leg was back filled, and the post-maintenance test completed; however, the work activity and the post-maintenance test were not authorized to be performed as identified by the SS signatures in the MWR. In addition, following the beginning of the refueling outage in early March 1993 and after the SS final review had been completed, additional work was conducted using MWR 92-0185. The team identified these failures to follow procedure as examples of Deficiency 50-298/93-202-03, Failure to Follow Procedure.

Special Order 93-02, Revision 1, "Core Spray 5A and 5B," dated October 12, 1993, provided a means of maintaining the core spray minimum flow valves (CS-MOV-MO5A(B)) closed with no flow present. The team noted that the licensee had not thoroughly considered the operations procedures that would assist the operators in implementing the special order. Specifically, the licensee had not identified the plant indications that would be expected in the event the associated temporary modification was required to be implemented. The licensee subsequently initiated a procedure enhancement comment on November 5,

1993, to direct the operator to refer to Special Order 93-02 for the annunciator response procedures to core spray A and B discharge pipe low pressure.

2.1.5 Use of Equipment Set Points in Operating Procedures

The team noted that the NRC and the licensee (Deficiency Report 93-453, dated October 10, 1993) had recently identified concerns with the accuracy of set points in operating procedures; however, the licensee's procedure revision process had not been effective in ensuring that the identified procedure discrepancies were promptly corrected and that the operators were apprised of the corrections.

Before the team's arrival on site, the licensee had identified numerous set point concerns with several systems, including the high-pressure coolant injection (HPCI) system and a drywell radiation monitor. The team noted that on November 5, 1993, the drywell alarm annunciated. The operators subsequently determined that the set point identified in the procedure was incorrect. The team noted that this discrepancy had been identified on October 21, 1993, and a procedure change notice (PCN) to Procedure 2.3.2.17A initiated. However, as of November 5, 1993, the PCN had not been approved and the correct set point had not been incorporated into the applicable procedure. The operators also had not been informed of the procedure discrepancy. A temporary PCN (TPCN) was initiated and issued on November 5, 1993, which adequately addressed the procedure discrepancy.

2.1.6 System Walkdowns

2.1.6.1 High-Pressure Coolant Injection Walkdown

The team performed a system walkdown of the major accessible portions of the HPCI system and its support systems. System drawings were verified. The system appeared well maintained and in good condition and the team considered it a strength. All questions raised by the team were adequately resolved by the licensee. One inoperable fire door was noted during the conduct of this system walkdown. This item is further discussed in Section 2.4.3 of this report.

2.1.6.2 Control Room Heating, Ventilation, and Air Conditioning (CR HVAC)

The team performed a comprehensive review of the safety-related portions of the control room and control building HVAC systems required by technical specifications and the Updated Safety Analysis Report.

A licensed operator and two HVAC system engineers assisted in the CR HVAC system walkdown. No deficiencies were observed during the walkdowns. The licensee had performed a thorough system review the previous week and found some component labeling missing, minor procedure errors, and two maintenance items. Corrective actions had been completed or were in process to correct

the identified problems. A review of the discrepancies yielded no immediate operational problems. The safety-related portions of the HVAC systems were verified to be aligned per system drawings and procedures.

Each safety-related HVAC component was verified to be operable with no outstanding maintenance work requests that could affect equipment operability. A review of nonconformance reports (NCRs) and deficiency reports (DRs) for the previous 2 years did not identify any present system operability concerns. However, during the review of the established HVAC preventive maintenance (PM) tasks and the vendor recommended PM items, two discrepancies were identified.

While reviewing the PM tasks developed for the control building ventilation fan motors, HV-MOT-(SF-SWGR-1F) and HV-MOT-(SF-SWGR-1G), the team found that Task 07272 directed the inspection of the motor bearings and lubrication with Mobilux #2 or Chevron SRI #2 grease. The licensee had prepared a PM index sheet that allowed for the use of any lubricant listed in the vendor manual as equivalent greases. The Mobilux #2 grease was a lithium soap-base grease while the Chevron SRI #2 was a polyuria soap-base grease. Polyuria and lithium soap-base greases are incompatible, but equivalent. Mixing incompatible greases could lead to the loss of lubricity and subsequent premature failure of lubricated components.

The team found that the engineer who prepared the maintenance index sheet was not aware of the problems associated with the mixing of incompatible greases. As a result, the engineer prepared a PM task that would permit the mixing of incompatible greases.

Although the PM activity had not been performed because the fans had been recently installed as part of a design change, the team considered the instructions provided in Task 07272 inadequate because greases with incompatible soap bases could have been mixed. The failure to have adequate instructions to prevent mixing incompatible greases in the motor bearings is another example of Deficiency 50-298/93-202-01, Inadequate Procedures.

While reviewing Design Modification 88-053B, which added the essential portions of the control building HVAC system, the team identified that the weekly PM to cycle Dampers HV-AD-1405, 1406, 1407, 1408, 1409, and 1410 had never been performed. The licensee identified the PM item in the design change package but failed to incorporate the PM into the maintenance program. On November 9, 1993, the licensee initiated a deficiency report to address the missed PM. The dampers were subsequently cycled satisfactorily. The team identified the failure to have PM procedures for the dampers as an example of Deficiency 50-298/93-202-01, Inadequate Procedures.

2.1.7 Shutdown From Outside the Control Room

Procedure 5.2.1, Revision 22, "Shutdown Outside the Control Room," provided for shutting down the reactor if the control room becomes uninhabitable for any reason other than a fire. The team conducted a walkdown of the procedure with the operations relief crew and monitored key operations personnel to

ensure each member could perform the assigned function contained in the procedure. The team found the procedure was appropriate to shut down the reactor from outside the control room.

In addition to the walkdown, the team reviewed the operator training provided and equipment necessary to complete the activity. The team identified the following concerns:

- An onshift RO was required to assist the SOs in completing the remote plant shutdown activities; however, no security keys, for access to the remote shutdown panel, were available in the control room for this individual.

- No documented simulator or plant walkdowns for any of the procedures on remote shutdown have been performed and no classroom training on Procedure 5.2.1 has been conducted. Only a limited number of operators have performed the job performance measures. It was found that two SROs that would have been responsible for implementing the procedure were unaware that the reactor trip location outside the control room had been changed in December 1990. This change precluded passage through the cable spreading room, which shared the same ventilation system as the control room.

- No procedural precaution or guidance was given to the operators to avoid passing through the cable spreading room after the control room had been evacuated.

The above concerns are identified as Observation 50-298/93-202-02, Remote Shutdown Training.

2.1.8 Operations Surveillance Testing

Control room personnel oversight of surveillance activities was generally good. There was good use of self-checking practices before manipulating switches, and an extra day shift operator was provided to coordinate the conduct of the surveillance activity within the control room. The extra licensed operator provided an effective means of minimizing the distractions associated with coordinating the surveillance activity with control room personnel. The team noted a willingness to work around procedural inadequacies to complete a surveillance activity and a lack of rigor in following up on identified procedural discrepancies.

On November 1, 1993, during performance of Surveillance Procedure 6.3.8.2, Revision 35, "SLC Pump Operability Test," good communications were noted between the control room operators, the licensed operator, and SO at the SLC pumps. However, the operators were not able to complete Step 8.3, "Fill test tank as necessary, using DW-171, SLC TEST TANK SUPPLY, to obtain a water level ~ 6" from top of tank," until they opened two additional valves (DW-416, 417) to establish demineralized water flow to the test tank. The team identified the operation of the two valves outside the controls provided in the procedure as an example of Deficiency 50-298/93-202-01, Inadequate Procedures.

The team subsequently asked the licensee if a procedure change had been initiated and noted that the PCN was not initiated until after the team raised the concern.

2.1.9 Shift Technical Advisors (STAs)

The team reviewed the licensee's STA program and associated procedures. The licensee had established expectations for STAs that met only the minimal technical specification requirements. The STAs routinely did not attend shift turnovers and were not considered to be part of the operations compliment. The use of STAs for activities and events other than emergency conditions was not well defined. For example, CNS Procedure 0.23, "Shift Technical Advisors," established a requirement that the STA on watch was required to be in the control room during a "significant planned evolution"; however, after interviews with several STAs, it could not be ascertained what a "significant planned evolution" was. The team noted that the STA function was discontinued during the flooding conditions in July 1993 when the plant was in an unusual event. Although this was permitted by the technical specifications with the plant in cold shutdown, it demonstrated a lack of safety awareness for the potentially significant plant transients that could occur as a result of the flood waters on the offsite power supply and the physical plant.

During the assessment of STA training, the team identified that the licensee had not been effective in assessing the significance of, or in resolving, repetitive training problems. The licensee's quality assurance organization had documented in Quality Assurance Surveillance 93-2700-32, that five STAs had been assigned to stand watch from October 14-21, 1993, without current certification. In assessing the significance of the finding, the licensee failed to identify this occurrence as a technical specification issue. In addition, this was the third incidence, in 4 years, of individuals having been assigned to a task without current certification (Surveillance Report Finding 92-2700-20). The licensee subsequently initiated NCR 93-229 and was revising the STA training program and procedures at the end of the inspection period. The team identified the licensee's failure to adequately assess and implement effective corrective actions for repetitive training problems and meet the technical specification requirements as an example of Deficiency 50-298/93-202-04, Inadequate Training.

2.2 Maintenance

The team observed mechanical, electrical, and instrumentation and control (I&C) work activities in progress and reviewed approximately 50 MWRs, including both open and closed work packages and procedures for various maintenance programs and associated documentation.

2.2.1 Maintenance Programs and Organization

The major components of plant maintenance were performed by workers/ technicians in either the Maintenance or the Operations departments. The electrical and mechanical maintenance, welding/machining organizations reported to the Maintenance Manager in the Maintenance Department and the I&C

organization resided within the Operations Department. The maintenance planning group (including planning for the I&C group) reported to the Maintenance Manager.

Procedures were established for the control of maintenance activities and the major programs for which the Maintenance Department had responsibility, such as predictive and preventive maintenance. The team reviewed programs for such maintenance activities as thermography, vibration analysis, and lubrication oil sampling. The licensee pointed out that the effectiveness of the predictive maintenance program was limited because the engineers' work load was such that the thermographic results conducted since the last refueling outage had not been input into the computer.

The team noted that the licensee had not established its expectations for the conduct of troubleshooting activities. The licensee relied extensively on verbal discussions between the work groups and the operators to define the work activity. In discussion with maintenance supervisors, it was stated that at least half of the electrical MWRs were "investigate and repair" work orders. The team identified the failure of the licensee to establish its expectation as another example of Observation 50-298/93-202-01, Weakness in Communicating Management Expectations.

The number of open MWRs appeared to be at a manageable level (approximately 755 open MWRs). However, during the inspection, the team noted three examples where multiple troubleshooting activities were conducted using the same MWR number. The number of MWRs may therefore be misleading. In one case, an MWR for a torus level instrument was held open for over 13 months while troubleshooting activities were performed (see Section 2.1.4). The other two examples are discussed in Section 2.2.3.

The team identified a potentially significant concern that outdated or inaccurate information may be used to perform work activities. This was of particular concern for troubleshooting work activities that typically instruct the technician to investigate and repair. The basis for this concern came about when the team observed the use of uncontrolled (personal and training copies) vendor manuals in the electrical maintenance work shop. An electrical maintenance technician used an uncontrolled manual to answer a technical question posed by the team. The team verified that, in this particular case, the MWR being implemented contained no incorrect information from the uncontrolled manual.

2.2.2 Work Package Review

The team reviewed approximately 40 completed MWRs and found that the packages contained numerous inconsistencies. The work packages reviewed included work performed on the HPCI and residual heat removal (RHR) systems. The packages were limited to safety-related work. Items reviewed included work instructions, quality control inspector signoffs, material traceability through inclusion of warehouse issue tickets, and engineering controls on maintenance activities.

Material traceability was generally satisfactory; however, engineering controls were not applied properly to work done under MWRs. An example involved MWR 93-2691, which had been issued to fabricate a replacement restricting orifice plate for HPCI-RO-137C. The licensee found this orifice plate missing during a plant walkdown, and rather than determining the design requirements for this orifice plate, the licensee provided work instructions to fabricate a duplicate to HPCI-RO-137B. No requirement was provided to ensure that the orifice plate installed in HPCI-RO-137B was correct for the HPCI A train. A deficiency report was initiated November 17, 1993, to address this issue. A second example involved MWR 93-0855, which covered a modification on a drain line from a 24-in. RHR pipe. Although a work request was submitted to the Nuclear Engineering Department (NED), the modification to the drain line was performed in accordance with two memoranda from NED rather than a design package. A third example involved replacement of the RHR pump suction spool pieces as authorized by MWR 93-0801. The spool piece was torqued in accordance with values specified in Maintenance Work Practice 5.1.2, "Flexatallic Flange Joints," Revision 0. When the pipe was filled with water for inservice leak testing, one or more of the joints leaked. The craft subsequently "tightened" the bolts beyond the specified torque valves to prevent leakage. No engineering involvement was obtained to ensure that the bolts were not overstressed. The team identified the problems associated with the work activities performed without proper engineering controls as an example of Deficiency 50-298/93-202-05, Configuration Control.

The team's review of MWR 93-3590, which was issued to set the oil pressure on the HPCI turbine lube oil system, identified that the MWR work instructions had not been followed. The MWR special instruction sheet stated that the purpose of the valve adjustments was to verify that the pressures were within their specified ranges and referenced a procedure but did not state what the specified ranges were. Step 4 of the instruction sheet required that the pressure at pressure indicator HPCI-PI-2783 be adjusted to read 82.7 kPa (12 psig), with no tolerance provided. Step 5 recorded the as-left reading as 75.8 kPa (11 psig), with no explanation for the discrepancy. The team verified that an operability concern did not exist. It was subsequently noted that the associated Surveillance Procedure 6.3.3.1.1, "HPCI IST and Quarterly Test Mode Surveillance Operation," Revision 2, stated that the acceptable range for HPCI-PI-2783 was 68.9-82.7 kPa (10-12 psig). The team identified the inadequate MWR work instructions as another example of Deficiency 50-298/93-202-01, Inadequate Procedures.

2.2.3 Maintenance Activities Observed

The team observed that a very high degree of reliance has been placed on the "skill of the craft." Although the team found an experienced maintenance and I&C staff, concerns were identified that the knowledge level of the workers and the procedure adequacy may not provide sufficient checks and balances to ensure a work activity was performed correctly. This concern was based on recent NRC and licensee findings involving operability of the emergency diesel generators and the team's finding discussed in Section 2.4 where the utility workers who had been performing fire door inspections were not sufficiently trained to properly perform the inspection.

The team found that the PM program relied extensively on "skill of the craft." The PM task cards issued to the maintenance workers had limited written instructed and lacked acceptance criteria. Two instances were noted the PM tasks could not be performed as written. (1) These examples dealt with cleaning the 24-V battery chargers and (2) performing a visual inspection of the diesel fuel oil transfer pump. The PM inadequacies were identified as an example of Deficiency 50-298/93-202-01, Inadequate Procedures.

The team identified concerns with the plant staff's practice of leaving MWRs open for extended periods of time. This practice permitted multiple work activities not listed on the original MWR to be performed on the component. The team observed two examples in which MWRs that were in the process of being closed were used to perform additional repair activities not included in the original MWR. In the first instance, the licensee's preparations to investigate and repair the cause of an oil leak on the recently repaired RWCU pump A were identified during the licensee's morning plan-of-the-day meeting and the maintenance representative stated that, since the original MWR under which the repair work was performed was still open and in the review process, this MWR would be used for the lube oil leak repair. Later, the team determined that the same MWR had, in fact, been used to authorize the work. The second instance involved the use of an MWR as a troubleshooting activity associated with standby gas treatment temperature indicator SGT-TI-537A. The licensee had identified that the SGTA activated carbon iodine absorber outlet temperature appeared to be drifting high. This indicator had been examined the previous day under MWR 93-3895 and a faulty component unit was replaced. The team noted that no work instructions, limitations, or references were provided and the post-maintenance test only specified that technicians verify proper operation of SGT-TI-537A. The MWR had been reviewed and signed off as acceptable by the department supervisor; however, the MWR was again used on November 2, 1993, to conduct additional troubleshooting. The licensee subsequently issued Deficiency Report 93-493 on November 3, 1993, to document that work was performed on MWR 93-3895 after the shop supervisor had reviewed and approved the work performed and then revised the MWR without proper reviews required by Procedure 7.0.1.3, Revision 1, "Maintenance Work Request-Documentation of Work." The team identified the use of MWR 93-3895 to perform work after it was closed by the supervisor without being revised and the failure to specify the post-maintenance test requirement as an example of Deficiency 50-298/93-202-03, Failure to Follow Procedures.

The team observed that routine ongoing maintenance activities in the areas of I&C, and electrical and mechanical maintenance were appropriately reviewed and found to be properly planned, controlled, and performed in a manner that did not adversely affect the safe operation of the plant. First line supervisors were cognizant of ongoing work and involved in close supervision. Pre-job briefings were held for complex or difficult jobs. An instance was identified for the calibration of temperature switch RWCU-TS-115 (non-safety) under MWR 93-3913 in which the instrument set point was obtained from an uncontrolled computer data base instead of the instrument setpoint log. The team verified that the computer referenced set point matched the setpoint in the log.

2.3 Surveillance

The team observed surveillance tests conducted during the shift routine portion of the inspection and also while observing I&C work activities. In addition, the team randomly sampled technical specification surveillance requirements to determine if these requirements were covered by surveillance procedures, were scheduled at the proper frequency, and were performed within the established frequency. The control of the program also was discussed with the surveillance coordinator.

2.3.1 Surveillance Programs

A Corrective Actions Program Oversite Review Group (CAPOG) initiative that reviewed surveillance tests for Operations/I&C surveillances was discussed with a CAPOG representative. Approximately 800 Operations/I&C surveillance procedures were included in the CAPOG review. Discrepancies found were classified by type and reviewed to determine if the discrepancy resulted in questions about technical adequacy of the completed surveillance. In six cases, tests were required to be re-performed to correct the discrepant condition. After the review was completed, training sessions were held with the Operations/I&C personnel to explain the findings and to better train the personnel on the proper methods for conducting and documenting surveillance performance. In addition, program changes were made to clarify when steps in surveillance were permitted to be marked as not applicable.

The observations and deficiencies were noted during the review of surveillance tests are discussed below.

2.3.2 Surveillance Package Reviewed

During the team review of surveillance procedures, several minor discrepancies were noted. The licensee responded to these discrepancies, showing where procedure change notices (PCNs) were already in existence dealing with the procedure problems. Some of these PCNs had been initiated as early as September 1993. The team expressed a concern over the length of time taken to process theses types of procedure changes. The team had previously identified concerns with the timeliness of PCNs, as documented in Section 2.1.6. The licensee responded by explaining how the PCNs are prioritized and providing the team with information showing the recent trending of PCNs open for longer than 2 weeks and those open longer than 2 months. For those procedure changes under the responsibility of the Safety Review Group (SRG), the data indicated that PCNs increased sharply during the last refueling outage, but by the end of the outage the open PCNs were at a level of around 50-55. The trend showed that, since returning to operation from the last refueling outage, the total number of PCNs has remained relatively constant for those changes under the responsibility of the SRG. Those open PCNs under the responsibility of engineering did not show the high swings that were experienced by the SRG; however, the data indicated that the overall trend for open engineering PCNs was increasing. The team determined this was another example showing the increasing backlog of work accumulating in the engineering organization.

During the surveillance procedure reviews, the team determined that the controlled manuals in the Training Library contained both Revisions 19 and 20 of Procedure 6.1.5. This was the second example of problems noted during the inspection with controlling the manuals in the Training Library. The first example was when the team identified an out-of-date control copy of technical specification in the Training Library. The failure to adequately maintain controlled documents was an example of Deficiency 50-298/93-202-03, Failure to Follow Procedures.

2.3.3 Surveillance Activities Observed

The team witnessed SLC pump inservice testing (IST). Subsequent to the test, historical IST data was reviewed. SLC Pumps A&B have been on increased frequency testing since December 1990. Quality Assurance (QA) Audit 93-18-A, dated August 25, 1993, identified 13 components on increased testing frequency, including the SLC pumps. The QA report failed to recognize that Engineering Procedure 3.9, "ASME Code Testing of Pumps and Valves," Revision 6, required the pumps to be repaired or replaced, or an engineering analysis be performed demonstrating that the condition did not impair pump operability and that the pump will perform its intended function. Additionally, ASME Section XI, IWP-3230, "Corrective Action," also required the above actions to be performed. The failure to perform these actions in accordance with Procedure 3.9 and Technical Specification 6.3.2B was considered an example of Deficiency 50-298/93-202-03, Failure to Follow Procedures.

The team also identified that the licensee's program for identifying components on increased IST testing frequency failed to inform managers as to the evaluations or corrective actions associated with these components. The system and IST engineers were cognizant of the problems associated with SLC pumps and indicated they had discussed component problems with management. However, from discussions with management it was not readily apparent that management was aware of the problems. Therefore, it appeared management relied on the system engineer to resolve the problem and that this had not been effective in resolving the IST deficiencies associated with SLC pumps.

The team observed the performance of portions of Surveillance Procedure 6.2.2.1.1, Revision 23. This procedure instructed technicians on how to perform required functional tests of reactor vessel water level instruments used for initiating numerous emergency core cooling system (ECCS) as well as the diesel generators and reactor core isolation cooling system. Initially, only one technician was in the auxiliary relay room to check when multiple relays changed state as required by several steps of the procedure. However, the technician experienced some difficulty in performing the steps because of the diverse locations of these relays. On two occasions, required steps had to be re-performed to ensure that all the relays changed state within the required limits. After the second time, an additional technician was requested in the auxiliary relay room to help complete the test. The I&C supervisor commented that he would discuss these types of test procedures with the I&C technicians and implement corrective actions taken in any area where the technicians felt that additional help or procedure revisions were necessary.

While monitoring the performance of the above surveillance in the auxiliary relay room, the team observed operator aids on the front of panel 9-45, and on milliampere meters for main steam isolation valve solenoids inside panel 9-41. The aids on panel 9-45 were orange dots over various indication panel lights. A note taped to the panel indicated that the orange dots were provided to show which lights were normally energized. These orange dots were faded and one had obviously fallen off. The licensee stated these dots had apparently been put on the panel sometime ago, were not used for any present purpose, and were not under the control of the operator aid procedure. The licensee removed these noncontrolled operator aids. Likewise, the aids on the milliampere meters consisted of green tape indicating a "normal band" for the meters. The licensee stated that several I&C and Operations procedures required that these instruments be checked to be in the "green band." Therefore the licensee stated that the existing procedure for meter banding (Procedure 3.26.1) would be expanded to include these instruments. The team determined that these were examples of the licensee failing to follow its procedures on controlling operator aids and meter banding procedures and was an example of Deficiency 50-298/93-202-03, Failure to Follow Procedures.

2.4 Fire Protection Activities

During the OSTI, the team witnessed an unannounced fire drill and reviewed fire brigade training, fire door material conditions, and fire protection surveillance activities.

2.4.1 Fire Brigade Training

The team reviewed the requirements for fire brigade member training and qualification. The team noted that the licensee had identified a discrepancy in the training of fire brigade members who were not members of the Operations staff in that they had not been included in the quarterly fire brigade training. This discrepancy, which was documented in NCR 93-243, dated October 28, 1993, was identified as a part of the licensee's OSTI preparations.

The licensee's fire brigade staffing required five members on each shift. Two of the five fire brigade members may be people from outside the Operations staff. The safety evaluation report (SER) for Amendment 56 to the license stated, in part, that all five of the brigade members receive the same instruction and practice, including familiarization with the contents of the fire preplans with the exception that two members will not receive fire fighting strategy training because they are under the direction of a trained fire brigade leader. The team reviewed the 1993 quarterly training plans for fire brigade training. Many subjects were included that clearly did not fall under the definition of fire fighting "strategy training."

During the review of fire brigade member training records, the team identified an additional training discrepancy in that the fire brigade member training presentation data log (PDL) for the first quarter 1993 stated that the fourth quarter 1992 and first quarter 1993 required fire brigade training had been conducted concurrently. The licensee had not initiated any nonconformance documents for this discrepancy. In addition, during the review of computer-

generated training records, which document when fire brigade members had received their required quarterly training, it was found that training for some fire brigade members had not been received on a "quarterly" basis. Many fire brigade members had only received two documented quarterly training sessions during 1992. Even with annual training, several fire brigade members had received only three of the four required quarterly training sessions. During its review of the training program description (TPD) for fire brigade members, the team found that the quarterly training requirements were scheduled every 4 months instead of at a 3-month frequency. The licensee included these additional discrepancies in its review of NCR 93-243.

On November 3, 1993, the team was presented with a memorandum from the Manager Nuclear Licensing & Safety dealing with the training requirements for security force fire brigade members. In summary, the manager stated that their position, based on the SER for Amendment 56 to the license, was that the technical specification allowed two members of the fire brigade to receive a lesser amount of training than the rest of the brigade and that this could include not requiring the two non-operations members to attend the quarterly fire brigade training required by the three operations fire brigade personnel. The team reviewed the SER and technical specification requirements. Technical Specification 6.1.4.A states that a training program for the fire brigade will be maintained under the direction of the Training Manager and shall meet or exceed the requirements of Section 27 of the National Fire Protection Association (NFPA) Code, except for fire brigade training sessions, which shall be held quarterly. The SER for Amendment 56 to the license, states, in part, that all five of the brigade members receive the same instruction and practice, including familiarization with the contents of the fire preplans with the exception that two members will not receive fire fighting strategy training because they are under the direction of a trained fire brigade leader.

The team found that the licensee's conclusion that the two non-operations members were not required to attend the quarterly fire brigade training was contrary to Technical Specification 6.1.4.A. The team identified the licensee's failure to provide quarterly training to the security officers as required by the Technical Specification as Deficiency 50-298/93-202-04, Inadequate Training.

On November 16, 1993, the licensee concluded that the security officers were required to complete quarterly training and were making program changes to ensure this would happen. All security officers were determined to either be current (due to recent annual training) or had been given recent quarterly training, so that all sections had sufficiently qualified fire brigade members in the security officers.

Concurrently with the team's review of fire brigade member training records, the licensee explained that training attendance records had incorrect dates for the fourth quarter 1992 fire brigade training to permit record entry into the computer. The team reviewed these records and concluded that many of the attendance sheet start and completion dates had been altered. In some cases, this was done by lining out the actual dates and writing in a new date. In other cases, a 1 or 2 had been inserted into the month and the 3 had been

written over to make it a 2 for the year. Therefore, in one case, the actual date of 1/18/93 became 11/18/92 and, in another case, 1/25/93 became 11/25/92. The revised dates were the dates entered into the computer for the completion dates of fourth quarterly 1992 fire brigade training. On November 18, 1993, the licensee presented the team with a memorandum from R. Yelkin to J. Dutton dated November 18, 1993, documenting the licensee investigation into the alteration of the attendance records. The licensee's investigators concluded that the date changes were, in fact, made to bypass a problem with the training computer system. The licensee presented the team with the entire training package submitted for the combined training sessions. The package contained the altered attendance sheets and these same attendance sheets without alterations.

The team concluded that these records resulted in incorrect dates being input into the computer, which identified the conduct of required fire brigade quarterly training activities that were not actually conducted. This resulted in incorrect information on fire brigade training being supplied to the team during the first week of the inspection. The team noted that, based on the licensee's conclusions resulting from its investigation, training personnel demonstrated a willingness to work around programmatic problems rather than have them resolved. Subsequently, the licensee modified the computer program to accurately document that two separate training classes were held on the same day. The team identified the failure to accurately revise the fire brigade member training in accordance with Nuclear Training Instruction (NTI)-02, Revision 10, "Training Records" Section A.6, as Deficiency 50-298/93-202-06. Training Records.

2.4.2 Fire Drill

The team observed the conduct of the unannounced fire drill on November 4, 1993. The scenario consisted of a simulated diesel fuel oil fire in the augmented radwaste building. This was within the radiologically controlled area and was near stored radioactive material. The fire brigade members responded to the drill as required and were supported by additional security officers, and a health physics individual. The team also attended the post-drill critique.

The team noted several concerns with the performance of the fire brigade members and the licensee's ability to evaluate the fire brigades performance. These concerns included (1) a lack of communication between the fire brigade leader and the fire brigade members; (2) the health physics technician could not enter the fire area to assess potential radioactive airborne activity because he had not donned protective clothing and respiratory gear; (3) the two fire brigade members not from operations staff (security officers) could not locate their air masks and entered the fire area without appropriate protective gear; and (4) the licensee had not provided sufficient observers to effectively evaluate the fire brigade's performance.

The team concluded that either personnel injury could have occurred in a real event or the fire brigade member would have been significantly delayed while the appropriate protective gear was obtained. The team identified this as Observation 50-298/93-202-03, Fire Drill.

2.4.3 Fire Door Operability

During the HPCI system walkdown, the team noted that fire door R1 in the reactor building had a break in the caulking. The break was located between the door jam and the adjacent wall. A continuous firewatch was stationed, and the door was repaired under an MWR, and NCR 93-226 was initiated to determine if any further corrective action was necessary. As part of the corrective action for this NCR, the licensee performed Surveillance Procedure 6.4.5.2.12, Revision 4, "Fire Door Annual Inspection." One additional door (R101) was found to need the latching mechanism adjusted. Four other doors had problems that were analyzed as not affecting fire door operability. In addition, several other minor repairs were made to doors termed by the licensee "cosmetic" in nature. These inspections and repairs occurred from November 3 through November 9, 1993.

On November 13, 1993, the team returned to fire door R1 to inspect the repairs performed on the door. The repairs appeared adequate. However, while in the same vicinity, the team noted that the caulking around fire door R3 had broken away from the wall on the outside of the fire door. The licensee inspected this door, decided that the cracked caulking did not make the door inoperable, but that other problems with the door did. These other problems included gaps between the door that were more than the allowed 0.3175 cm (0.125 in.) procedure limit.

On November 15 and 16, 1993, the licensee again performed the annual fire door inspection on all fire doors. This time the fire protection engineer was involved in the inspection. Previous inspections were carried out by utility workers from the Maintenance Department. The utility workers normally performed these inspections. During these reinspections, many fire doors were found exceeding the door to door frame gap limit or the door to floor gap limit. By November 17, 1993, 20 fire doors had continuous fire watches until repairs could be made on the doors. The licensee stated that more doors had gaps over the current limits; however, an operability evaluation had been satisfactorily performed on these remaining doors. This determination (OE No. 93-000-047) referenced two industry reports on the fire endurance of certain fire rated door configurations. The licensee decided that all but the 20 doors declared inoperable fit the description of the doors in one of these two reports. The gaps used in the report were approximately twice the size as that currently permitted by the licensee's surveillance procedures; therefore, the licensee was comfortable that all these doors would pass reinspection using the new relaxed criteria. However the licensee assigned a roving firewatch to monitor these doors until the reinspections could be performed.

The team questioned the licensee on why these fire door gap problems were not found during the previous inspections. The licensee stated that the surveillance procedure was not clear on how to measure the fire door gap. Also, training on how to do this inspection was handed down from utility worker to worker as a "skill of the craft" item. Thus, the inspections consisted of spot checking the gap around the door. The inspections performed with the fire protection engineer measured the gap around the entire door to ensure that no excessive gap existed.

The inoperable fire doors found by the team were contrary to the requirements of Technical Specification 3.19 A. This was identified as Deficiency 50-298/93-202-07, Fire Doors.

2.5 Engineering and Technical Support

The team reviewed the onsite engineering organization for organizational structure and interfaces; staffing; and work backlogs; scheduling and prioritization of work activities; and support of plant operations. The technical quality of engineering performance was assessed by reviewing documents associated with design modifications, temporary modifications, operability determinations, and evaluations.

The team, through numerous document reviews and discussions with licensee personnel, assessed the technical adequacy of engineering support, the effectiveness of interfaces between engineering and other groups, and the quality of the workload management system.

The team assessed the technical adequacy of the engineering support of plant operations by reviewing a sample of plant modifications, nonconformance and deficiency reports, operability determinations and evaluations, and temporary modifications.

The CNS Engineering Department was the primary onsite engineering resource. This organization was headed by an Engineering Manager, with three groups each reporting to a department supervisor. The three groups were Operations, Plant, and Programs Engineering.

2.5.1 Operations Engineering

The Operations Engineering group consisted of 10 budgeted engineers who were responsible for power production systems including the reactor, turbine, and associated support systems. The engineers were divided into three groups: reactor, operations, and performance engineering, with each group reporting to a lead engineer.

The assignment of system engineers was divided between the Operations Engineering group and the Plant Engineering group. The system engineers with Operations Engineering were assigned system responsibility for reactor, turbine, and associated support systems. The licensee informed the team that two system engineers in the Operations Engineering group had not formally qualified as system engineers. For these two individuals, the licensee required that a lead engineer or qualified system engineer review and countersign all documents that required the system engineers' signatures.

The team interviewed several system engineers in the Operations Engineering group, including the two unqualified system engineers. The team noted that the unqualified system engineers had been in their current positions for a minimum of 1 year, but had not been qualified on their assigned systems. The system engineer training that had been provided to the qualified system engineers indicated that these individuals had not received formal training specific to their assigned systems. The team established numerous contacts

with system engineers during the course of the inspection, during which technical engineering matters were discussed. In general, the system engineers were found to be technically proficient. However, several cases were noted where the system engineers had not attained expert knowledge of their systems through experience and/or training to be fully effective.

2.5.1.1 Plant Engineering

The Plant Engineering group consisted of 14 budgeted engineers who were responsible for safety systems including reactor protection, containment isolation, emergency power, and emergency core cooling. The engineers were divided into two groups, electrical/I&C and mechanical engineering. Each group reported via a lead engineer to the plant engineering supervisor.

System engineers in this group were assigned to a multitude of systems, safety related and not safety related, each distinct from the systems assigned to the operations engineering group. Two engineers were assigned to each system: one responsible for the mechanical aspects of the system, the other the electrical portion. This split assignment for each system had been instituted to address a perceived historical problem of an engineer with a mechanical engineering degree having responsibility to evaluate an electrical problem.

2.5.1.2 Programs Engineering Group

The Programs Engineering group consisted of 13 budgeted engineers who were responsible for the technical direction of several engineering programs such as ASME, Appendix J, snubber testing, environmental qualification, and procurement. The group was divided into three areas: programs, mechanical, and electrical/I&C. Engineers assigned to this group were consulted by the team during this inspection, though none were formally interviewed.

2.5.2 Design Modifications and Configuration Control

The team reviewed two recently completed design modification packages to a level of detail that included the general statement of the change and all required reviews including the 10 CFR 50.59 safety evaluations. The first package was an extensive modification to the service water and reactor equipment cooling systems (DC 93-057) that involved mechanically and electrically separating portions of these systems to meet the design basis. The second package was a relatively minor modification to the diesel generator day tanks (DC 93-28) that involved the installation of a valve on the existing day tank drain line.

The team concluded that these two design change packages were sufficient in content and detail to have properly evaluated all relevant concerns related to the changed configuration of the plant. The safety evaluations, in both cases, were well written, broad in scope, and reflected a conservative engineering approach. The team did not identify any issues of concern related to the two modifications.

During the week before to the first week of this inspection, both of the reactor water cleanup pumps experienced thrust bearing failures and were declared inoperable until repairs were made. The licensee issued NCR 93-230 to investigate what appeared to be a common-mode failure of the two pumps. Preliminary findings indicated that the bearing failures were caused, at least in part, by a mirror insulation housing that had been erected around the bearing enclosure of each pump, which evidently raised the operating temperature of the thrust bearings to an unacceptable level. The team learned that the insulation had been erected without any documentation, such as a design modification or maintenance work request, and thus was not reviewed for functional impact.

The team reviewed the licensee process concerning past and existing policies regarding how configuration changes to insulation were handled. The licensee stated that no consistent policy existed and that insulation was added or changed to a different type using a MWR. The team concluded that the practice of modifying insulation without employing the design change process was contrary to Appendix B to 10 CFR Part 50, Criterion III, Design Control, which states in part that design changes shall be subject to design control measures commensurate with those applied to the original design. In addition to the failure to handle insulation changes as design changes, another causal factor in the insulation deviations was an apparent problem in restoring insulation that was removed for maintenance to its original configuration. The licensee speculated that several of the cases of missing insulation were the result of failing to reinstall insulation that had been removed for maintenance purposes. The licensee's policy has resulted in a loss of design configuration control of the plant's insulation design and has created potential safety concerns related to seismic design, thermal performance, fire analyses, reactor sump debris loading, and personnel safety. This issue was identified as a Deficiency 50-298/93-202-08, Design Modifications.

In response to these issues, the licensee performed a walkdown of two rooms (areas four and eight) to determine the extent of deviation between the installed insulation and the configuration specified by design documents. Approximately 5 and 10 deviations were discovered in these areas, respectively. These deviations included insulation that was specified but not installed and insulation that was of a different type than specified. The licensee evaluated the discrepancies and concluded that no nuclear safety problems existed. The licensee committed to extend the insulation walkdowns to include all accessible safety-related areas by the end of 1993 and the balance of safety-related areas at the next extended reactor shutdown, most likely the next refueling outage.

In discussions with licensee engineers, the team identified a weakness in the system turnover process that takes place following installation of a modification. Modified systems can be turned over to operations with the following items not updated or completed: preventive maintenance procedures, surveillance procedures, maintenance procedures, controlled drawings in any location other than the control room (this included the emergency operations facility (EOF) and the technical support center (TSC)), vendor manual issues, and labeling or tagging of the new components. These items are addressed as the workload permits, but there is no administrative time limit for

completion. The team noted that one modification had not been completely closed out 2.5 years after the installation had been completed. The team was mostly concerned with the following vulnerabilities that this practice appeared to create: (1) during an accident, personnel in the EOF and TSC may be using out-of-date drawings; (2) plant operators may have to manipulate newly-installed components without the aid of labels or tags to ensure the right component has been identified; and, (3) components may malfunction before surveillance or maintenance procedures were available for use. The team concluded that the lack of a prescribed time schedule for these activities was a weakness in the licensee's program. NPPD management stated that this issue would be evaluated for corrective action. This item is identified as Observation 50-298/93-202-04 Complete Modification Package.

2.5.2.1 Temporary Modifications

The team reviewed eight temporary modification packages, each of which were installed at the time of the inspection.

The 10 CFR 50.59 safety evaluation for Temporary Modification 93-37 was considered to be incomplete. This temporary modification removed a site glass flow indicator in the reactor water cleanup system. The safety evaluation did not address the consequences of losing this indication. The licensee stated that this question had been asked at the time, but that it had been inadvertently left out of the safety evaluation. Otherwise, the team determined that the reviewed temporary modifications were satisfactory ad addressed design considerations in a manner functionally equivalent to the regular design change process.

The team identified a deficiency associated with the screening process that determined whether various design reviews were required. Procedure number 2.0.7, "Temporary Modifications," Revision 16, Attachment 2, stated that, if the affected system is out of service (inoperable or shutdown and not required for standby service), the following reviews were not required to be performed: 10 CFR 50.59 safety evaluation, fire protection design evaluation review, temporary modification technical review, and Station Operation Review Committee (SORC) approval. This practice was acceptable; however, the procedure did not provide measures to ensure that these reviews were preformed in the event the system was placed in service with the temporary modification still installed. The licensee acknowledged the problem and performed a review to determine if any currently open temporary modifications installed in operable systems had not been properly reviewed. Two examples were found, though neither involved a safety-related system. Temporary Modifications 93-31 and 93-35, both affecting plant security systems, were installed in systems that had been returned to service without completion of the required reviews. The licensee stated that the reviews would be performed immediately. The team identified the inadequate temporary modification procedure as Deficiency 50-298/93-202-09, Temporary Modification.

2.5.3 Interfaces With Other Groups

The team conducted several interviews with both onsite engineers and those based in Columbus, Nebraska (the design engineering group), specifically

requesting these individuals to assess the effectiveness of interfaces among the engineering groups and other plant departments. No mention was made in these interviews of any difficulties in communication or the existence of professional differences that would impede an efficient exchange of information. The fact that design engineers were located in Columbus rather than on site did not appear to present any problems of concern.

2.5.4 Workload Management

The team determined that workload management within engineering was ineffective. A workload summary presented to the team indicated that approximately 500 individual work activities were open and that approximately 20 percent of these items were currently overdue. The work activities included NCRs, DRs, Information Notices, Part 21 reports, and other miscellaneous items. The process of extending due dates for individual assignments was not formally or consistently performed. Since due dates were the only mechanism used to prioritize work, the lack of a formal due date update system meant that there was no effective priority system directing engineers how to sequence their work efforts.

The size of the backlog had grown considerably as a result of the extended outage over the spring and summer of 1993. In response to the mounting workload, the licensee transferred approximately 15 percent of the backlog to the design engineers in Columbus. Based on information presented by the licensee, the team concluded that the backlog problem did not include design modifications, which appeared to be well controlled from a scheduling perspective. The lack of effectively controlling the backlog of work activities is identified as Observation 50-298/93-202-05, Work load.

2.6 Health Physics

To evaluate the effectiveness of the health physics (HP) program, the team observed the maintenance of sump pump R in the turbine building from a HP perspective and reviewed the licensee's ALARA program and HP procedures. A sample of personnel contamination reports (PCR), radiation safety incident reports (RSIRs), and ALARA work packages also were reviewed.

The health physics program adequately maintained the licensee's ability to provide radiological oversight, planning, and support of maintenance and operations activities. The HP program was sound

2.7 Management and Oversight Activities

The licensee accomplished a number of self-assessment activities that, in conjunction with NRC inspection and enforcement activities, identified the need for performance improvement. The licensee created action plans to implement the self-assessment results. The OSTI team reviewed some of the licensee's programs and initiatives to determine their effects on the activities observed during this inspection and their long-term prospects for improvement.

2.7.1 Management Programs and Initiatives

In early 1993, "CNS Performance Assessment Project Report" identified a number of weaknesses in CNS management and staff performance, administrative controls, and corrective action programs. A number of remedial actions were recommended by the assessment team but were not completely or effectively implemented at the time of the OSTI.

In June 1993, NRC Inspection Report 50-298/93-17 documented a number of violations involving problem identification and correction (e.g. problem resolutions were not thorough, they emphasized expeditious closure and justification of continued plant operation, they lacked a broad view and ignored potentially generic implications, and root causes were not effectively addressed).

In mid-1993, the licensee formed a Corrective Action Program Oversight Group (CAPOG) to monitor and help direct improvements in performance. The CAPOG activities included extensive historical review of corrective action documentation and interviews with the plant staff, both aimed at identifying plant material condition problems or technical issues that may not have been adequately addressed in the past. The CAPOG also began to overview the current stream of deficiency items. From May to August 1993, the licensee had a corrective action program self assessment group (CAPSAG) to evaluate CNS's performance. The CAPSAG found problems very similar to those identified in NRC Inspection Report 50-298/93-17. The CAPSAG also found that the resources involved in executing the corrective action programs at CNS were strained by the heavy paper-oriented work loads. However, at the time of the OSTI, many specific CAPSAG remedial actions were in progress, but were not effective in preventing recurrence of historical problems.

In July 1993, the licensee formed the enforcement issues investigation team to identify and correct the underlying causes of the violations reported in NRC Inspection Report 50-298/93-17 and to determine the validity of NRC's findings. Again, the general conclusions, reported on August 25, 1993, were similar to the foregoing CNS experience.

During October 1993, the licensee conducted an organizational and programmatic assessment to identify the common-cause attributes of performance problems. The preliminary results of this review once again reflected the same kinds of problems that had been found before, identified common (root) causes for the organizational and performance problems, and recommended remedial actions.

Finally, in October - November 1993, the licensee performed vulnerability review documented in the "NPPD OSTI Preparation Report." This review found a number of functional problems warranting further action but generally did not rigorously pursue potential vulnerabilities.

The team found that, with the exception of the more recently completed organizational and programmatic assessment and "NPPD OSTI Preparation Report," the licensee had not effectively addressed the fundamental causes of poor

performance previously identified by the NRC and the licensee's own assessments. The team's basis for these conclusions is provided in Section 2.7.4 "Management Effectiveness."

2.7.2 NPPD OSTI Preparation Review Report

The licensee prepared for the NRC OSTI at CNS by establishing an OSTI preparation team, whose members reviewed previous NRC OSTIs performed at other facilities. Over 200 findings or weaknesses were tabulated and assembled into a data base and were then reviewed for applicability to CNS. The licensee's team developed positions and action plans, if necessary, to address the issues at CNS. The data base was divided into functional areas, and many of the action plans were reviewed by the NRC inspection team. Other functional areas of this report address specific issues with the associated action plans.

The majority of this review was tabletop in nature and did not result in the identification of issues that a more thorough performance orientated review may have identified. The licensee indicated that the review was time-constrained.

The team identified several examples in which the assessment was not thorough and did not sufficiently cover the discrepancy. This was evident in the lubricant dedication and adherence to procedures.

2.7.3 Business and Strategic Planning

The results of the licensee's self-assessments discussed in Section 2.7.1 (except for the more recently completed organizational and programmatic assessment" and "NPPD OSTI Preparation Report") were compiled in the "Nuclear Power Group Strategic Plan for Performance Improvement" (SPPI), dated October 1993. This plan organized the individual issues and results of the self-assessments and specified actions, responsible persons, and schedules for each item. The OSTI team and the licensee's organizational and programmatic assessment consultant both found that the SPPI was not a strategic plan aimed at managing the breadth of CNS activities and providing long-term systemic adjustments with appropriate management feedback. It was rather a narrowly focused plan of action to correct the specifics of the input self-assessments.

NPPD subsequently provided the team with a partial first draft of a strategically oriented business plan that was intended to address the Nuclear Power group's vision, mission, values, goals, and objectives. The licensee hoped to have the plan substantially complete by January 1994. Although the licensee's draft plan appeared to be generally well directed, it was difficult for the team to judge its effectiveness because of its preliminary form.

2.7.4 Management Effectiveness

The team evaluated the licensee's overall management response and plans to address the performance and corrective action problems identified by its assessments and NRC's inspections, including the technical and management issues identified during the OSTI. NPPD's own assessments and evaluations generally identified problems in the areas of organizational effectiveness,

communications, and the need for higher standards of staff performance and accountability. As stated earlier, the licensee began a number of remedial activities consolidated in the SPPI to improve performance.

This inspection found unacceptably low standards of licensee staff performance and rigor in routine activities. Although the team observed that CNS senior management was advocating raised performance standards and was trying to communicate its expectations to plant personnel, many of the detailed inspection findings, such as inadequately performed fire door surveillance and upkeep, staff training deficiencies, training record irregularities, fire drill execution and evaluation, and a continuing trend of procedure useability and adherence problems clearly indicate poorly defined or understood standards and management expectations.

Several of the team's findings indicated either a lack of management understanding or commitment to pursue the complete and comprehensive solution of problems. Actions in response to problems were frequently narrowly focused and did not represent the self-questioning characteristics needed to obtain improved safety performance. For example, the licensee failed to rigorously pursue an initial, team-identified fire door deficiency. Subsequently, additional door deficiencies were identified by both the OSTI team and the licensee after an inadequately performed licensee technical specification surveillance. The team observed the licensee's apparent inability to seek broader problem implications and potentially generic problem growth in the licensee's response to this problem and to problems with emergency diesel generator (59 series) relay deficiencies and shift technical advisor and fire brigade training problems. Although senior management supported expectations of comprehensive problem response, middle management and supervision appeared unable to execute a rigorous response in the various examples identified by the team.

The effectiveness of both past and current problem dispositions was also weak. Many of the issues found deficient by both the licensee and NRC during this inspection had been previously evaluated and, in some cases, closed, by the licensee's processes. Although the CAPOG had done a review of recent plant documentation to identify inadequately dispositioned prior problems, previously handled issues kept resurfacing as incompletely or inadequately resolved. Examples included the procedure adequacy for calibration of the emergency diesel generator relays, fire brigade training delinquencies, STA training delinquencies, inadequate post-maintenance testing for control room ventilation and the standby gas treatment system, and others. The licensee's planning, such as the SPPI, did not include provisions for continuing to aggressively seek out such problems. Some informal actions were under way, for example, the Plant Engineering Department planned to review, whenever practical, the history of management or hardware problems by "boring backward" and identifying any poorly closed issues. However, the licensee has not articulated on any structured basis how it will continue to ensure that safety significant problems are thoroughly resolved the first time.

Several of the licensee's self-assessment activities addressed the significant impact of administrative workloads on the Nuclear Power group staff. OSTI team interviews and field inspection activities found that staff members were

frequently unable to complete field duties or rigorously deal with issues because of the administrative workloads involved with processing corrective action (and other) paper work. Several examples were identified during the team's review of engineering and technical support functions, as discussed elsewhere in this report.

The licensee did not have an integrated program for staff workload prioritization and coordination. Little performance data or trend information was available for routine work loads below the level of major performance indicators. A few activities such as outage work and SPPI activities were scheduled using simple Gantt charts, but none of the backlogs or ongoing work, such as engineering resolution of technical problems, was scheduled on any resource-loaded bases. The licensee did not use management information systems and tools, which other licensee's have found either helpful or necessary, such as resource-loaded scheduling of major workloads, fragment logic development for complex or interorganizational tasks, partitioned action item data bases, site-wide prioritization schemes, and strong schedule discipline. The lack of an integrated management system appears to be at least contributing to performance problems in several areas such as extensive delays in corrective action processing, delays in procedure change processing, backlogs in procedure and labeling completion for installed modifications, delinquencies in staff training, frequently overdue actions in the Plant Engineering and Operations Engineering groups, and others.

In conclusion, the licensee has not demonstrated that its performance improvement plans were comprehensive or viable. Although the intentions of the plans were appropriately directed, insufficient progress had been made in their implementation while serious performance and management problems persisted. The lack of effective management involvement and the lack of a questioning attitude in assessing station problems is identified as an Observation 50-298/93-202-06, Management Involvement.

2.8 Corrective Action Programs

The licensee's corrective action programs were evaluated, in detail, during an NRC inspection documented in Inspection Report 50-298/93-17. The team focused on corrective action documents the licensee considered closed after May 1993. The team reviewed six licensee event reports and three items previously identified by the NRC that the licensee considered ready for closure. The team also reviewed 37 nonconformance reports and 26 deficiency reports that had been closed by the licensee since May 1993.

In addition to the document reviews, the team observed a meeting of the Nonconformance Oversight Committee. The team considered the licensee's use of this forum a strength. The committee provided a means for those responsible for developing replies to corrective action documents to become familiar with management's expectations by requiring the responsible party to present to the committee the reasons why the corrective action was ready for closure.

In response to a recent inspections an subsequent escalated enforcement action, the licensee was developing a new corrective action program that was scheduled for implementation in January 1994. The new program was being

modeled after programs existing at other licensees' facilities. The team noted that the new program would be based on one corrective action document rather than multiple documents.

2.8.1 Previously Identified Items

The team reviewed the following inspection followup item and violations for closure:

- Inspection Followup Item 298/9123-01: Emergency Diesel Generator Air Solenoid Design Modification

- Violation 298/9209-01: Procedure Did Not Require Independent Verification

- Violation 298/9319-01: Low Electrolyte Level in Safety-Related Batteries

The details associated with this review are contained in Region IV Inspection Report 50-298/93-29.

2.8.2 Licensee Event Reports

The team reviewed the following licensee event reports for closure: 91-015, 92-010, 93-007, 93-022, 93-028, and 93-030.

The details associated with this review are contained in Region IV Inspection Report 50-298/93-29.

2.8.3 Nonconformance and Deficiency Reports

The team reviewed 37 nonconformance reports and 26 deficiency reports. The team found that the licensee had properly addressed the issues identified with the exception of NCR 93-180 and DR 93-230 and DR 93-311.

The team questioned the licensee's disposition of NCR 93-180. A Barton model 288A differential pressure indicating switch, NBI-PIS-52B, which was one of four switches used in a one out-of-two taken twice logic that controlled the permissive to open core spray and low-pressure coolant injection valves below a reactor pressure of 3103 kPa (450 psig), was found during a normal plant shutdown to not actuate until the reactor pressure was between 1724 and 2068 kPa (250 and 300 psig). Investigation showed the high switch actuating arm pivot pin was bent. The pin was straightened, and the Barton was retested satisfactorily and returned to service. No other corrective actions were performed. The team questioned whether the licensee had sufficiently explored the potential generic implications of this event.

DR 93-230, May 17, 1993, documented the licensee's identification of a worker and his supervisor who had worked more than 24 hours in a 48-hour period. The licensee's corrective actions were to have the supervisor read the overtime procedure and to remind the worker of his responsibility to obtain approval before doing work that could violate the overtime procedure. The licensee

closed this deficiency report on May 24, 1993. DR 93-311, July 12, 1993, documented the licensee's identification of three workers who had exceeded 72 hours of work in a 7-day period. The licensee's corrective actions were to counsel the responsible lead engineer with respect to ensuring administrative requirements were followed. The licensee closed this deficiency report on August 10, 1993.

The team found that the licensee's corrective actions for each of the overtime deficiency reports were not adequate to prevent recurrence. The licensee addressed only the individuals involved in the events, not those required to comply with the overtime regulations. The team concluded that the failure to take corrective actions to prevent recurrence was an additional example of the corrective action program deficiencies identified in NRC Report 50-298/93-17 for which corrective actions have not been implemented.

Other than the three exceptions noted above, the team considered the NCRs and DRs they reviewed well documented with sufficient detail to understand the basis for the final disposition. For each NCR and DR, an attempt was made to determine the root cause of the identified problem. Corrective actions were generally sufficient to address both the specific and potentially related problems. The engineering dispositions were technically proficient and conservative in judgment.

2.9 Industry Events

The team reviewed four generic communications received by the licensee to compare Procedure 0.10.1, "Operating Experience Review," with the actual packages. The packages also were reviewed to assess if the corrective action process was structured to emphasize safety as well as compliance.

The licensee used the action item tracking system (AITS) to track the review of generic communications. Each generic communication received was entered in the AITS by the Regulatory Compliance Specialist, who, in turn, forwarded the document to the Technical Staff Manager for disposition to the appropriate reviewers and managers.

Based on the team's review of Information Notice (IN) 92-48, "Failure of Exide Batteries," it was determined that this item was reviewed with respect to compliance only. The only action taken was to verify that the licensee did not have any of these batteries on site. DR 93-216 was written to describe CNS safety-related batteries EE-BAT-125V (1A) and (1B) and EE-BAT-250V (1A) and (1B) were exhibiting the same corrosive conditions as the batteries referenced in IN 92-48.

The Operating Experience Review program was undergoing a self-assessment for adequacy and completeness. The results of this self-assessment were not available for review by the team.

3.0 EXIT MEETING

The team met with licensee representatives (denoted in Appendix A) in an open meeting on November 19, 1993, and summarized the purpose and findings of the inspection. The licensee did not identify any such documents or processes as proprietary.

APPENDIX A

EXIT MEETING ATTENDEES

Cooper Nuclear Station (Managers)

C. Bean	Construction Manager
R. Brungardt	Operations Manager
W. Cook	NPPD Board of Directors
J. Dutton	Training Manager
C. Estes	Senior Manager of Operations - Acting
J. Flaherty	Nuclear Manager Trainee
R. Gardner	Plant Manager
H. Hitch	Site Services Manager
G. Horn	Vice President - Nuclear
R. Jansky	Outage and Modification Manager
J. Lynch	Engineering Manager
E. Mace	Senior Manager of Site Support
J. Meacham	Senior Nuclear Division Manager
C. Moeller	Technical Staff Manager
H. Parris	Vice President - Production
D. Robinson	QA Manager - Assessment
J. Sayer	Radiological Manager
G. Smith	QA Manager - Operations
M. Unruh	Maintenance Manager
K. Walden	Nuclear Configuration Management Department Manager
R. Wenzl	NED Site Engineering Manager
D. Whitman	Division Manager of Nuclear Support
R. Wilbur	Division Manager of Nuclear Engineering and Construction
S. Woerth	Nuclear Manager Trainee
V. Wolstenholm	Division Manager of QA

U.S. Nuclear Regulatory Commission

Don Beckman	NRC Consultant
Robert E. DePriest	NRR
James E. Gagliardo	RIV Section Chief
Joseph T. Gilliland	RIV
Eugene V. Imbro	NRR Branch Chief
William B. Jones	RIV Assistant Team Leader
Peter S. Koltay	NRR Section Chief
Ronald Kopriva	Senior Resident Inspector
Frank J. Miraglia, Jr.	NRR Deputy Director
John W. Montgomery	RIV Deputy Administrator
Charles J. Paulk, Jr.	RIV
Gary Rhoads	NRC Consultant
Michael F. Runyan	RIV
Wayne C. Walker	Resident Inspector

Gregory E. Werner	R1V
J. D. Wilcox, Jr.	NRR Team Leader

APPENDIX B

DEFICIENCIES

DEFICIENCY NUMBER 93-202-01

FINDING TITLE: Inadequate Procedures

DESCRIPTION OF CONDITION: 10 CFR Part 50, Appendix B, Criterion V, requires activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, and drawings.

The following examples reflect where the licensee had inadequate procedures:

1. Procedures, which provide for the sample of the standby liquid control (SLC) tank and the diesel generator fuel oil storage tanks, had not incorporated the housekeeping requirement as specified in the quality Assurance Program for Operations, Revision 8. (Section 2.1.2)

2. PM Task 07272, developed for the control building ventilation fan motors, HV-MOT-(SF-SWGR-1F) and HVT-MOT-(SF-SWGR-1G), allowed combining the motor bearing's lubrications of Mobilux #2 and Chevron SRI #2 grease. The engineer who prepared the maintenance index sheet was not aware of the problems associated with mixing incompatible greases. As a result, the engineer prepared a PM task that would permit mixing incompatible greases. (Section 2.1.6.2)

3. The weekly PM cycle of control room dampers HV-AD-1405, 1406, 1407, 1408, 1409, and 1410 had never been performed. The licensee identified the PM item in Design Change Package 88-053B but failed to incorporate the PM into the maintenance program. (Section 2.1.6.2)

4. During the performance of Surveillance Procedure 6.3.8.2 for the SLC pump operability test, an operator manipulated two additional valves (DW-416 and DW-417) outside the procedural guidance. The procedure should have identified the subject valves. (Section 2.1.8)

5. MWR 93-3590 set the oil pressure on the HPCI turbine lube oil system but did not specify what the ranges were. The pressure for pressure indicator HPCI-PI-2783 was required to be adjusted to read 82.7 kPa (12 psig), with no tolerance provided. The craft adjusted the pressure indicator to 75.8 kPa (11 psig), with no explanation for the discrepancy. (Section 2.2.2)

6. Two PM tasks could not be performed as written. One dealt with cleaning the 24-V battery chargers and the other with performing a visual inspection of the diesel fuel oil transfer pump. In the case of the diesel generator fuel oil transfer pump, PM tasks 0200 and 0201 were inadequate to accomplish the PM. The work instruction specified only to "inspect" when the task actually involved a visual and audible inspection

of the pump and motor. The work instruction did not specify a means of starting the fuel oil transfer system to permit the inspection (Section 2.2.3).

DEFICIENCY NUMBER 93-202-02

FINDING TITLE: Limited Conditions for Operations

DESCRIPTION OF CONDITION: Technical Specification Table 3.2.F identified the components "Primary Containment Surveillance Instrumentation Suppression Chamber/Torus Water Level (PC-LI-12 and PC-LI-13)" as being required to be operable. The noted level instruments were inoperable without the licensee declaring them so between January 30 and 31, 1993. The instruments were removed from the plant location and placed in the shop (Section 2.1.4).

DEFICIENCY NUMBER 93-202-03

FINDING TITLE: Failure to Follow Procedures

DESCRIPTION OF CONDITION: 10 CFR Part 50, Appendix B, Criterion V, requires activities affecting quality to be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and to be accomplished in accordance with these instructions, procedures, and drawings.

The following examples reflect the licensee's failure to follow plant procedures:

1. A maintenance work request (MWR) was improperly used after the work identified on the MWR had been completed. The MWR was used to perform additional work on the component to include post-maintenance testing and correcting a level instrument with an incorrect reading (Section 2.1.4).

2. MWRs were identified as being left open for extended periods of time. This practice permitted multiple work activities to be performed on the component, and the use of an open MWR on a component to perform a rework-type activity without specific instructions. For example, the licensee prepared to investigate and repair the cause of an oil leak on the recently repaired reactor water cleanup pump A. The original MWR, under which the repair work was performed, was still open and in the review process, and was to be used for the lube oil leak repair. Secondly, an MWR that had been closed by the department supervisor was used to perform troubleshooting activities on November 2, 1993, on standby gas treatment temperature indicator SGT-TI-537A (Section 2.2.3).

3. Training Library controlled manuals contained both Revisions 19 and 20 of surveillance procedure 6.1.5. and an out-of-date control copy of technical specifications (Section 2.3.2).

4. Engineering Procedure 3.9, "ASME Code Testing of Pumps and Valves," Revision 6, required the pumps to be repaired or replaced or an engineering analysis be performed demonstrating that the condition did

not impair pump operability and that the pump will perform its intended function. Additionally, ASME Section XI, IWP-3230, "Corrective Action," also required the above actions to be performed. The team witnessed SLC pump inservice testing (IST). SLC pumps A&B have been on increased frequency testing since December 1990 without the required repair, replacement, or engineering analysis being performed. There were 13 components on increased testing frequency, including the SLC pumps (Section 2.3.3).

5. [illegible]dure 2.0.9, "Control of Plant Labeling and Operator Aids," Revision [illegible] described the controls needed for operator aids/labeling. Contrary to [illegible] procedure, operator aids were found, including "green band" marking [illegible] plant, that were not being controlled by Procedure 2.0.9. (Section [illegible]).

DEFICIENCY NUMBER 93-202-04

FINDING TITLE: Inadequate Training

DESCRIPTION OF CONDITION: Between October 14-21, 1993, five shift technical advisors (STAs) stood watch after their training had expired. Throughout the year, Security Officers who were members of the fire brigade were not undergoing quarterly training. In addition, there was confusion about whether training sessions had been held quarterly for all members of the fire brigade because of computer programming problems and the licensee combining two quarters of training into one training session (Section 2.4.1).

Contrary to the above, technical specification 6.1.4.B required qualified STA for shift coverage during this period of time (Section 2.1.10). Also, technical specification 6.1.4.A requires that the fire brigade training sessions shall be held at least quarterly. These were examples in which the licensee failed to meet technical specification requirements related to qualified members standing watch (Section 2.1.9).

DEFICIENCY NUMBER 93-202-05

FINDING TITLE: Configuration Control

DESCRIPTION OF CONDITION: 10 CFR Part 50, Appendix B, Criterion II, "Quality Assurance Program," states, in part, that "The quality assurance program shall provide control over activities affecting the quality of the identified structures, systems, and components, to an extent consistent with their importance to safety."

Contrary to the above, there were examples in which the licensee failed to maintain configuration control. The following examples were identified:

1. Engineering controls were not properly applied to work done under MWRs. MWR 93-2691 was issued to fabricate a replacement restricting orifice plate for HPCI-RO-137C, which the licensee found missing during a plant walkdown. The licensee fabricated a duplicate orifice to an adjacent flange rather than determining the design requirements for the missing

orifice plate. Secondly, MWR 93-0855 was used to modify a drain line from a 24-in. residual heat removal (RHR) pipe. This modification to the drain line was performed in accordance with two memoranda from the Nuclear Engineering Department (NED) and the noted MWR rather than a design package. Third, MWR 93-0801 was used to replace the RHR pump suction spool pieces. The spool piece was torqued to the maximum value allowed in Maintenance Work Practice 5.1.2, "Flexatallic Flange Joints," Revision 0. When the pipe was filled with water for inservice leak testing, one or more of the joints leaked. The craft subsequently tightened the bolts to prevent leakage. No engineering involvement was obtained to ensure that the bolts were not overstressed (Section 2.2.2).

DEFICIENCY NUMBER 93-202-06

FINDING TITLE: Training Records

DESCRIPTION OF CONDITION: 10 CFR Part 50, Appendix B, Criterion V, requires activities affecting quality shall be prescribed by documented instructions, procedures or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures and drawings. Procedure NTI-02, "Training Records," Revision 10, Section A.6 requires that "A single line in ink will be drawn through an entry in a record that is to be changed, leaving it legible, with the new entry near the old entry." Contrary to the above, changes made in the start and completion dates in various attendance records concerning the fourth quarter 1992 and first quarter 1993 fire brigade training were made by overwriting the original dates on the form (Section 2.4.1).

DEFICIENCY NUMBER 93-202-07

FINDING TITLE: Fire Doors

DESCRIPTION OF CONDITION: Technical Specification 3.19 A required the integrity of fire barriers and fire-wall-penetration seal be maintained. Contrary to the requirement, on November 2 and 13, fire doors R1 and R3, respectively, were found inoperable. Further inspection revealed that a total of 20 fire doors were inoperable (Section 2.4.3).

DEFICIENCY NUMBER 93-202-08

FINDING TITLE: Design Modifications

DESCRIPTION OF CONDITION: 10 CFR Part 50, Appendix B, Criterion III, "Design Control," states, in part, that "Design changes, including field changes, shall be subject to design control measures commensurate with those applied to the original design and be approved by the organization that performed the original design unless the applicant designates another responsible organization."

Contrary to the above, changes to the design and configuration of piping and equipment insulation were routinely made without the use of the design change process. As a result, reviews were not performed in a manner commensurate to those applied to the original insulation design (Section 2.5.2).

DEFICIENCY NUMBER 93-202-09

FINDING TITLE: Temporary Modification

DESCRIPTION OF CONDITION: 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," states, in part, that activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances...."

Contrary to the above, Procedure 2.0.7, "Temporary Modifications," failed to provide measures to ensure that the necessary reviews associated with temporary modifications, which were deferred because the affected system was out of service, were performed in the event the system was placed back in service with the temporary modification still installed. As a result of this procedural deficiency, at least two in-service temporary modifications had not been properly reviewed (Section 2.5.2.1)

APPENDIX C

LIST OF INSPECTION OBSERVATIONS

50-289/93-202-	DESCRIPTION
01	Weakness in Communicating Management Expectation--management expectations have not been clearly defined and communicated to all plant personnel (Section 2.1.1 and 2.2.1).
02	Remote Shutdown Training--several examples of operator confusion in the area of simulated remote shutdown training indicate a lack of a formal training program (Section 2.1.7).
03	Fire Drill,--the fire drill conducted on November 4, 1993, had several weaknesses. Of particular importance was the improper use of protective gear, inadequate monitoring of the drill, and poor communications (Section 2.4.2).
04	Complete Modification Package--the licensee had examples where modification packages were held open for an extended period of time and lacked essential elements to complete the modification package. (Section 2.5.2)
05	Work Load--the management organization has not effectively prioritize, monitored and controlled the backlog of work activities (Section 2.5.4).
06	Management Involvement--the licensee had noticeable examples where there was ineffective management involvement and a lack of a questioning attitude in assessing station problems (Section 2.7.4).