OFFICE OF INSPECTION AND ENFORCEMENT
DIVISION OF QUALITY ASSURANCE, SAFEGUARDS,
AND INSPECTION PROGRAMS
PERFORMANCE APPRAISAL SECTION (PAS)

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Licensee: Nebraska Public Power District
P.O. Box 499
Columbus, Nebraska 68601

Facility: Cooper Nuclear Station

Inspection at: Nebraska Public Power District
Company Offices and Cooper Nuclear Station

Dates of
Inspection: October 22 - November 2 and November 13-16, 1984

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Enclosure (2)

INSPECTION SUMMARY

The inspection was conducted October 22 through November 2 and November 13 through 16, 1984 (Report 50-298/84-21).

Areas Inspected: A special, announced inspection was performed of the licensee's management controls over selected licensed activities. The inspection was conducted by seven NRC inspectors and involved 672 inspector-hours on site and at the corporate offices.

Results: The licensee's management controls for nine areas were reviewed and conclusions were drawn in each area based on observations presented in this report. The licensee's performance in each area was categorized in accordance with the NRC's latest guidance for evaluating licensees under the Systematic Assessment of Licensee Performance (SALP) Program. For the areas inspected, the conclusions are presented as Category One, Category Two, or Category Three.

Plant Operations - Category Three
Training - Category Three
Quality Assurance - Category Two
Radiological Controls - Category Three
Procurement - Category Two
Maintenance - Category Two
Design Changes and Modifications - Category Two
Corrective Action Systems - Category Two
Committee Activities - Category Two

Additionally, 29 potential enforcement findings were presented to the NRC Region IV Office as unresolved items for follow-up.

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INSPECTION OBJECTIVE

The objective of the inspection was to evaluate the management control systems that had been established in support of licensed activities. The results provide input to the NRC evaluation of licensees from a national perspective.

The inspection effort covered licensed activities in selected functional areas. In each of the functional areas, the inspectors interviewed responsible personnel, observed activities, and reviewed selected records and documents to determine whether

a. the licensee had written policies, procedures, or instructions to provide management controls in the subject area

b. the policies, procedures, and instructions were adequate to ensure compliance with the regulatory and internal requirements

c. the licensee personnel who had responsibilities in the subject areas understood their responsibilities and were adequately qualified, trained, and retrained to perform their responsibilities

d. the requirements of the subject area had been implemented and appropriately documented in accordance with management policy

The specific findings in each area are presented as observations that the inspectors believe to be of sufficient importance to be considered in a subsequent evaluation of the licensee's performance. The observations were the perceived strengths and weaknesses that were used as the basis for determining the team's evaluation and categorization of each area in accordance with the following performance categories.

Category One - Reduced NRC attention may be appropriate. Licensee management attention and involvement are aggressive and oriented toward nuclear safety; licensee resources are ample and effectively used so that a high level of performance with respect to operational safety or construction is being achieved.

Category Two - NRC attention should be maintained at normal levels. Licensee management attention and involvement are evident and are concerned with nuclear safety; licensee resources are adequate and are reasonably effective so that satisfactory performance with respect to operational safety or construction is being achieved.

Category Three - Both NRC and licensee attention should be increased. Licensee management attention or involvement is acceptable and considers nuclear safety, but weaknesses are evident; licensee resources appear to be strained or not effectively used so that minimally satisfactory performance with respect to operational safety or construction is being achieved.

The performance categories defined above have been developed to meet the NRC's latest guidelines for evaluating each licensee under the Systematic Assessment of Licensee Performance (SALP) Program. These categories have been published in the Federal Register.

Some observations may be potential enforcement findings. These observations, referred to as unresolved items, were discussed with the licensee and were presented to the NRC Region IV Office for follow-up.

PLANT OPERATIONS

OBSERVATIONS

1. A review of completed Technical Specification (TS) surveillances was conducted on four safety-related systems. This review revealed the following significant problems with the periodic operability verifications for the station battery and the standby gas treatment (SGT) system.

   a. TS 4.9.A.3.c requires that the rated load discharge test of the station battery be completed during each operating cycle. This test had not been performed properly for at least the last two operating cycles. Specifically, the acceptance criteria used for the station battery rated load test, Surveillance Procedure (SP) 6.3.15.2, appeared to be nonconservative and was not supported either by the vendor technical manual or by IEEE Standard 450-1972, "Recommended Practice for Maintenance, Testing, and Replacement of Large Stationary Type Power Plant Substation Lead Storage Batteries." SP 6.3.15.2 required that the 250 VDC station batteries be demonstrated to have 1100 ampere-hours of capacity, which is approximately 80 percent of the manufacturer's rated capacity of 1368 ampere-hours. This had been accomplished by establishing a discharge rate of about 138 amperes for 8 hours. According to the vendor technical manual, however, the rated load specified for an 8-hour discharge rate is 171 amperes. The use of a lower discharge rate (138 amperes) is not consistent with Section 5.3 of IEEE Standard 450-1972, which states that a rated load test should consist of discharging the battery at a rate consistent with the manufacturer's rating (171 amperes).

   b. The quarterly battery operability tests have been performed with an apparently incorrect procedure, leading to a situation where operability cannot be verified. One of the battery operability acceptance criteria used in the quarterly battery check, SP 6.3.15.1, was a determination that the individual cell specific gravities exceed a minimum value of 1.190. A review of completed surveillance records revealed that this determination was made without correcting measured specific gravities for temperature changes and electrolyte level variances. The electrolyte levels in the individual cells were not recorded. The vendor technical manual for the station batteries states that cell specific gravities can vary significantly with temperature and electrolyte level. The failure to correct measured cell specific gravities to account for these effects has resulted in the quarterly TS surveillance check not demonstrating battery operability, contrary to TS 4.9.A.3.b. Additionally, the licensee's procedures provided no criteria or guidance if the specific gravity of a cell is found significantly different from the average at the time of the inspection. IEEE Standard 450-1972 requires corrective action to be taken, such as an equalizer charge, if the specific gravity of any cell drops more than 0.010 from the average.

c. Equalizer charges on the 250 VDC and 125 VDC station batteries were performed without procedures, and no records documenting the performance of these charges were available. There were no station procedures governing equalizer battery charges, and interviews revealed that the vendor technical manual was not used for battery charging. The personnel involved with battery charging were not aware of any criteria for successful completion of an equalizer charge, and they have not been in the practice of recording any data during battery charges. In addition, control room operators have not been in the practice of making control room log entries pertaining to battery charging. As a result, no written records were found documenting this activity. The failure to provide written procedures for station battery charging appears to be contrary to TS 6.3.2, which requires that written procedures be developed for the operation of plant systems and components involving nuclear safety.

d. The operability of the 250 VDC and 125 VDC station batteries was apparently not demonstrated after the completion of SP 6.3.15.2, Station Battery Rated Load Test. To restore the batteries to operability after a rated load test, an equalizer charge must be performed, followed by a check of the battery cells to verify they have acceptable individual cell voltages and specific gravities. No documented evidence was available to indicate the successful completion of an equalizer charge (see item 1.c above), and personnel interviews revealed that no check is made of all the battery cells before declaring the battery operable after performance of an equalizing charge. As a result, records show that both 250 VDC batteries and both 125 VDC batteries were not demonstrated to be operable as required by TS 3.9.A.4. Clarifying this issue, TS definition 1.Z states that the successful completion of appropriate surveillance tests are required before declaring a system or component operable after it has been taken out of service.

e. Surveillance tests to demonstrate acceptable efficiency of the SGT high efficency particulate air (HEPA) filters and charcoal adsorber banks were apparently not performed at design flow rates as required by TS 3.7.B.2.a. The design flow rate for the SGT system, as stated in the USAR, Chapter V, is 1780 cfm, and as stated in several places in the USAR, Chapter XIV, the SGT system provides one air change per day for the secondary containment. Personnel interviews and review of records of completion of SP 6.3.19.3, "SGT HEPA Filters Leak and Housing Door Seal Leak Test," and SP 6.3.19.4, "SGT Charcoal Filter Leak and Fan Capacity Test," revealed the following:

(1) There was no place to record SGT system flow rate on the data sheet for SP 6.3.19.3. However, SP 6.3.19.3 and SP 6.3.19.4 are normally performed together. When this is the case, the flow rate recorded for SP 6.3.19.4 will be the same as the flow rate for SP 6.3.19.3.

(2) SP 6.3.19.3 and SP 6.3.19.4 were both performed on April 20, 1984, at 1350 cfm and on August 13, 1984, at 1250 cfm. The system flow rates of these tests, as performed, were significantly less than the required 1780 cfm design flow rate.

f. TS 3.7.B.2.b requires that SGT system carbon samples be tested at a velocity within 20 percent of system design. Contrary to this requirement, SGT carbon samples were tested on February 15, 1983, and on August 20, 1984, at 16.2 meters per minute which was greater than 20 percent above the 12.2 meters per minute specified by the licensee as the design value.

g. TS 3.7.B.2.c. requires that SGT system fans be shown to operate at + 10 percent of design flow rate. The acceptable range for this test was incorrectly specified in SP 6.3.19.3 as 1575-1925 cfm. Based on a design flow rate of 1780 cfm as stated in the USAR, the acceptable operating range for the SGT fans is required to be 1958-1602 cfm.

The apparent failure to comply with TS requirements for demonstrating operability and providing adequate surveillance procedures for the station batteries and the SGT system was discussed with the licensee and will remain unresolved pending follow-up by the NRC Region IV Office (298/84-21-01).

2. Several weaknesses were noted regarding the control of plant systems and equipment. The following issues pertain:

a. The control of jumpers and bypasses appears to be inadequate. The program for temporarily installing bypasses and jumpers in plant systems did not require an unreviewed safety question determination. This is contrary to 10 CFR 50.59. Operations Procedure (OP) 2.0.2, "Operating Logs and Reports," revision 0, authorizes the Shift Supervisor to approve the installation of a jumper, provided that such action will not violate administrative procedures (APs), OPs, or TS. No other management review or approval is required. A review of the bypass log revealed a bypass that had been installed in this manner in 1979 and was still in effect to modify a flow input to the plant process computer. The apparent failure to provide adequate control over the installation of jumpers and bypasses was discussed with the licensee and will remain unresolved pending follow-up by the NRC Region IV Office (298/84-21-02).

b. A weakness was noted in the program to disable certain control room nuisance alarms by removal of the associated circuit card in the alarm panel. This action was being done with approval of the Shift Supervisor, and the only record of the disabled alarms was a magnetic red arrow placed next to the disabled alarm light. The associated alarm circuit card was required, by procedure, to be replaced at the end of each shift. This basically permitted operations personnel to respond once per shift to a nuisance alarm or an intermittent alarm caused by maintenance. This program was considered weak because a nuisance alarm could be disabled on a regular basis without making a necessary design change. Additionally, no records were found of alarms that had been disabled using this system. This could prevent management review or audit of this activity.

c. The program for ensuring independent verification of equipment status was reviewed and found not to conform to the licensee's commitment to NUREG-0737, Item I.C.6, as specified in a letter dated February 27, 1981, from J.M. Pilant (NPPD) to D.G. Eisenhut,

(NRC). CNS Procedure 0.9, "Equipment Clearance and Release Orders," revision 0, requires independent verification only for manual valves in the main flow path of safety-related systems. This procedure did not address switch, breaker, and other valve positions and did not reflect the commitment to NUREG-0737, Item I.C.6, which would require a second qualified person to verify correct tagging and return to service for equipment important to safety. A review of the Clearance Order Log revealed many clearance orders for which independent verification was not provided. This apparent failure to meet a commitment to NUREG-0737, Item I.C.6, was discussed with the licensee and will remain unresolved pending followup by the NRC Region IV Office (298/84-21-03).

3. The system for controlling operating procedures was weak. There were two sets of procedures in the control room, one in binders and another placed unbound on shelves in a large open file. Interviews with control room operators revealed that the loose procedures were usually used for plant operations because they are less cumbersome than those in the binders.

Four out-of-date procedures were found in the loose file as follows:

Procedure Found in Control Room	Current Revision
OP 2.1.5, "Emergency Shutdown From Power," revision 5	6
OP 2.1.15, "Reactor Recirculation Pump Operation," revision 10	11
OP 2.1.12, "Computer Data, Alarms, and Outage Recovery," revision 6	8
OP 2.2.13, "345 KV and 161 KV Power Systems," revision 7	8

The binder copy of OP 2.1.15 in the control room was also not the most recent revision. Additionally, there was no indication, such as a stamp or control number on individual procedures, to indicate that they were controlled. The apparent failure to provide the most recent copy of procedures to station operators is contrary to TS 6.3.1. This item was discussed with the licensee and will remain unresolved pending follow-up by the NRC Region IV Office (298/84-21-04).

4. The shift turnover checklists used by operators in the control room were found not to conform to the licensee's commitment to NUREG-0578, Item 2.2.1.c, as specified in a letter dated November 20, 1979, from J.M. Pilant (NPPD) to D.G. Eisenhut (NRC). Specifically, a review of shift turnover checklists revealed the following deficiencies:

a. Critical parameters and their allowable limits were not listed, as required.

b. Specific items to check and criteria for acceptable status were not listed, as required for assurance of proper alignment of safety systems.

This apparent failure to meet a commitment to develop and utilize shift turnover checklists as specified by NUREG-0578 was discussed with the licensee and will remain unresolved pending follow-up by the NRC Region IV Office (298/84-21-05).

5. The program to control the use of overtime for key operations personnel was found not to conform to the licensee's commitment to NUREG-0737, Item I.A.1.3, as specified in a letter dated June 4, 1982, from J. M. Pilant (NPPD) to D. G. Eisenhunt, (NRC). For example:

   a. Contrary to the guidelines of NUREG-0737, station licensed operators routinely worked more than 72 hours per week during September and October 1984.

   b. NUREG-0737 requires that the plant manager or his deputy grant approval to exceed the hours-worked guidelines. Contrary to this, the authorization to exceed the limit specified in item 5.a, above, was routinely made by the Operations Supervisor with after-the-fact acknowledgement by the Operations Manager. For this licensee, the Operations Manager is equivalent to the deputy plant manager as described in NUREG-0737. CNS Procedure 0.12, "Station Overtime and Recall of Standby Personnel," revision 0, had a form which enabled the Operations Supervisor to grant approval to exceed the limits of NUREG-0737.

   The apparent failure to meet a commitment to NUREG-0737, Item I.A.1.3, was discussed with the licensee and will remain unresolved pending follow-up by the NRC Region IV Office (298/84-21-06).

CONCLUSIONS

The failure to demonstrate operability and provide adequate surveillance procedures for the station batteries and the standby gas treatment system was considered a significant weakness. Several weaknesses were noted regarding the control of plant systems and equipment. Relating to this were inadequacies in the bypass and jumper program, weaknesses in the program to disable control room alarms, and the failure to meet a commitment to provide an adequate independent verification program. Four out-of-date operating procedures were found in the control room. Shift turnover checklists were found not to comply with a licensee commitment. The use of overtime by operating personnel was found to be excessive and not consistent with a licensee commitment to NRC guidelines.

This area was rated Category Three.

TRAINING

OBSERVATIONS

1. The apparent lack of direction and management commitment to the CNS training effort was considered a significant weakness. This was evidenced by the lack of promulgated corporate or plant management policies establishing goals, priorities, resources, responsibilities, or authority regarding the implementation of training. Additional evidence was obtained from interviews with first-line and second-line supervisors in the plant maintenance and operations organizations, which revealed a general lack of involvement with or commitment to training. It appeared that training was often perceived by them as being something that had to be done only to meet regulatory requirements.

2. In addition to the policy weakness noted above, another significant weakness common to all the CNS training activities was the lack of written implementing procedures to ensure that required training was performed and adequately administered.

   a. The licensee had developed no written procedures to implement the provisions of the approved CNS licensed operator requalification training plan. The lack of implementing procedures was particularly significant in this instance because the approved CNS licensed operator requalification training plan was quite general, as it only restated, in effect, the minimum requirements of 10 CFR 55, Appendix A. However, licensed operator requalification training did occur on an informal basis, relying on the experience and initiative of the training department staff to ensure that at least the minimum training requirements were met.

   b. The only discussion of non-licensed training (maintenance, general employee, health physics, engineering, shift technical advisor, etc.) was found in CNS Procedure 0.17, "Selection and Training of Station Personnel," revision 0. The guidance provided by CNS Procedure 0.17 is very general and represents little more than a restatement of the minimum training requirements of ANSI N18.1-1971. The licensee had not promulgated any procedures to implement the general provisions of CNS Procedure 0.17. As was the case with licensed operator training, the experience and initiative of the training department staff was relied on to ensure that at least the minimum regulatory requirements were met.

   The lack of comprehensive procedures to implement a training program was identified to the licensee by their consultants in Management Appraisal Report 50-298/EA 82-46 issued in April 1983. This finding (recommendation T-2) was presented as one of the significant problems facing the training organization. The report recommended that this problem be corrected with the highest priority, but the licensee made no specific commitments in their response to the NRC to implement this recommendation. Approximately 1½ years after the management appraisal report was issued, the inspector found little evidence of licensee effort to develop the needed procedures. The licensee had not even developed a plan with interim milestones to develop the needed procedures.

   The failure to implement a training program appears to be contrary to the requirement to establish such a program stated in Section 5.1 of ANSI N18.1-1971. This item was discussed with the licensee and will remain unresolved pending follow-up by the NRC Region IV Office (298/84-21-07).

3. Weaknesses were identified in the training of mechanical and electrical maintenance technicians.

   a. A mechanical maintenance instructor had been in the CNS training organization for approximately one year; however, his effectiveness had been significantly reduced because he did not have defined responsibilities and there was no prescribed mechanical maintenance training program.

   b. One instructor was assigned in the training organization to provide training in the electrical and instrumentation and control (I&C)

areas. This instructor had been in the training organization for approximately one year and had devoted his attention to only I&C training. Consequently this instructor provided no electrical maintenance classroom training for the past year.

c. The licensee relied primarily on a combination of an individual's previous work experience (prior to hire) and on-the-job training (OJT) to ensure that maintenance personnel were qualified to perform safety-related tasks. A review of personnel records indicated that the there was no system for screening the previous work experience of newly hired personnel to determine their training requirements. This issue was particularly significant because the licensee did not utilize an apprentice program for maintenance technicians. Instead, a newly hired maintenance technician was considered to be the equivalent of a journeyman-level technician from the first day on the job. Furthermore, the OJT system used for maintenance technicians lacked procedural guidance and appeared to be implemented inconsistently. There was little apparent effort to use the OJT system to ensure that maintenance personnel had demonstrated familiarity with safety-related maintenance tasks before they were assigned to perform those tasks independently.

4. On the basis of interviews with licensed plant operators and the monitoring of current licensed operator requalification training lectures, it appeared that much of the licensed operator requalification classroom training was of high quality. This could be attributed to the efforts of individual instructors rather than the presence of a written program. The classroom training monitored during the inspection appeared to challenge and interest the reactor operator and senior reactor operator students. During one monitored licensed operator requalification lecture on thermodynamics, the instructor appeared to very effectively merge theoretical concepts with their practical application in the plant.

CONCLUSIONS

The most significant weakness was the general lack of direction and management commitment to the training effort. Other weaknesses included the lack of implementing procedures for training and the lack of an effective on-the-job-training program for maintenance personnel.

A strength was the high quality of many of the licensed operator requalification training lectures.

This area was rated Category Three.

QUALITY ASSURANCE

OBSERVATIONS

1. CNS had no separate Quality Control (QC) organization. QC inspection was a collateral duty of station operations, maintenance and engineering personnel who had been certified as QC inspectors. This is an acceptable approach, provided that it is effectively managed. However, significant weaknesses were noted in the QC program as discussed below.

a. There was no approved station procedure for QC inspector certification. The certification process appeared to be controlled through the initiative of a person in the CNS QA organization. This person was approving certifications on the basis of review of the reported training and experience of plant personnel to determine compliance with the provisions of ANSI N45.2.6. There appeared to be little or no discretion exercised in the selection of QC inspectors to ensure that they represented the highest standards of technical proficiency available at the site, as evidenced by the fact that the station had a total work force of approximately 250 personnel and 184 were certified inspectors. This was considered a significant weakness. The lack of an approved program for QC inspector certification was discussed with the licensee and will remain unresolved pending followup by the NRC Region IV Office (298/84-21-08).

b. There was no training program for QC inspectors. The licensee stated that training to establish inspector qualifications was not necessary because the certification criteria could be met by previous education and experience. It was considered a weakness that there was not a suitable training program to update or reinforce the QC inspectors' understanding of such items as the station stop-work procedures, inspector independence, ethical standards for a peer inspector program, current industry practices, or unfavorable QC practices noted during QA surveillances and audits.

c. A weakness was noted in the QA manual regarding the adequacy of controls to ensure that QC inspectors had sufficient independence from the work they were inspecting. The QA program only required that the QC inspector be certified and be someone other than the person who performed the work. The program did not include provisions for ensuring that the QC inspector had the organizational independence from cost and scheduling responsibilities required by 10 CFR 50, Appendix B, Criterion I.

d. The person signing the QC checklist as the QC inspector for routine maintenance and repairs on safety-related equipment was not always the actual QC inspector. The same technicians who performed the work also performed surveillance tests for QC acceptance, and they signed as the QC inspector on the QC checklist. However, according to the QA manual and interviews, the actual "QC agent" for acceptance of post-work testing was the shift supervisor. He signed for the acceptance of QC testing after reviewing the surveillance data. It is recognized that the performance of post-work operability testing is required before returning safety-related equipment to service, but calling it QC testing without maintaining appropriate inspector independence is not acceptable.

2. The QA organization had what it referred to as a "positive audit" philosophy. This was explained by the licensee to mean that the primary purpose of audits was to demonstrate compliance with requirements. It appears that this philosophy weakned the auditors' objectivity. As a result, some problems were not recorded as audit findings, and therefore, did not receive the level of management attention needed for the determination of causes and implementation of corrective actions. For example:

a. The detailed report for Audit 84-05, "Radwaste," states that a monthly isotopic analysis of gaseous discharge, required by the Technical Specifications (TS), was not performed for the month of September 1983. The report also states that radwaste stability tests should have been in progress and a completion schedule developed, but no testing was in progress and no completion schedule was available (see Radiological Controls observation 5.b). Neither of these items was designated as an audit finding, nor was it identified as an item to be reviewed in a followup audit.

b. In the report for Audit 84-07, "Document Control," it was noted that document storage facilities were not in compliance with the applicable ANSI standard. As explained in the report, this was not designated as a finding because the problem had already been noted in four NRC inspection reports and the QA Division Manager was preparing a response to the NRC.

c. The report for Audit 83-21, "Routine Maintenance," states: "A review was performed to ensure procedures for the identification and control of lubricants, as addressed by QAP-1100 Section 1.3.c, were being followed. It was noted that there is no definitive program in effect for the identification and control of lubricants at CNS". This was reported as an observation, not as a finding. The same audit report lists deficiencies in the performance of safety-related preventive maintenance and identifies the specific station procedures that had been violated, but then states: "The above deficiencies are noted as an observation in that the actual work has been completed and that no adverse effect to the safety of CNS employees or the general public was encountered." There was no indication that these procedural violations triggered any concern to evaluate the resulting potential safety significance or correct the problem of having several procedural violations related to preventive maintenance of safety-related equipment.

The QA program defined an audit finding as "a failure to comply with a documented commitment of the Quality Assurance Program or operating license requirements identified during the performance of an audit." The apparent failure to properly apply this definition to identify audit findings has been discussed with the licensee and will remain unresolved pending follow-up by the NRC Region IV Office (298/84-21-09).

3. QA audits failed to comply with the provisions of the QA program by failing to address the specific audit objectives identified in the program. In many of the audit summary reports and the associated detailed reports, there was no evidence to indicate that all the objectives identified in the QA program were considered during the audit. For example:

a. The objectives of Audit 84-11, "Chemistry," included the verification that effluents released from the station were adequately monitored, chemistry activities were coordinated with the environmental monitoring program, and procedures and practices were consistent with NRC regulations. There appeared to be no indication in the summary or detailed reports that the auditor examined anything related to these concerns, yet the general conclusion was made that "the overall effectiveness of the implementation of the QA Program elements audited appears to be good."

b. The objectives of Audit 84-12, "Contractor Control," were to verify that contractor access was controlled in accordance with written procedures and agreements and that contractor personnel were required to observe all safety precautions for working at a nuclear power plant. Additional objectives were to verify that contractors had appropriate QA programs and were using approved NPPD procedures. The auditor appears to have limited his review to clearance records and access rosters, security and health physics training records, and exposure records. There was no indication in the report that written procedures and agreements existed between Nebraska Public Power District (NPPD) and the contractors or that the auditor examined any such agreements to determine their requirements. The report did not comment on the degree of compliance with requirements to observe all safety precautions for working at a nuclear power plant. The audit checklist was deficient in that it did not address NPPD-contractor agreements or safety requirements, and only provided a single yes-no-N/A checkoff for NPPD procedures and contractor QA programs.

The failure of QA audits to address the objectives specified in the QA program will remain unresolved pending follow-up by the NRC Region IV Office (298/84-21-10).

4. The SRAB participation in the QA audit program was weak. It appeared to be limited to approval of the annual audit schedule and a review of closed audit reports.

5. The Division Manager for Quality Assurance had established a list of "Objectives and Goals" based on a company-wide program to focus management attention on significant problems. This effort was considered a strength. It was noted that implementation of some of the QA goals and objectives would correct several of the weaknesses noted in this report. However, it did not appear that these goals and objectives were given adequate priority by senior management as indicated by the frequent need to reestablish new milestone dates.

CONCLUSIONS:

Significant weaknesses existed in the QC program. There was no procedure for inspector certification, no training program for QC inspectors, and an inadequate program to ensure appropriate inspector independence. The QA audits did not properly report deficiencies and nonconformances identified by the auditor, and the audits did not always address the audit objectives specified by the QA program. The SRAB discharge of its responsibilities for audits performed under its cognizance was weak.

The establishment of a "Objectives and Goals" program was considered a strength.

This area was rated Category Two

RADIOLOGICAL CONTROLS

OBSERVATIONS

1. A notable strength in the radiation protection program has been the excellent control of external radiation exposure of radiation workers.

Over the last six years, the licensee has averaged approximately 609 man-rems per year, one of the lowest radiation exposure averages of all large BWRs and well below the industry average of 1036 man-rems per year for BWRs operating during this period. These low doses were attributed primarily to strict adherence to chemical parameters, particularly maintaining reactor coolant conductivity below 0.1 μmho/cm.

2. Several significant weaknesses were noted in the training and experience level of the health physics (HP) staff.

   a. The Chemistry and Health Physics (C&HP) Supervisor had no prior experience working in a radiation protection program at a commercial nuclear facility before assuming his present position on June 27, 1984. His prior work experience consisted of four years of Navy nuclear experience and approximately 15 months as training manager for the licensee.

      Technical Specification (TS) 6.1.4 states that the C&HP Supervisor shall meet or exceed the qualifications of Radiation Protection Manager (RPM) specified in Regulatory Guide (RG) 1.8, September 1975. RG 1.8 states that the RPM should have at least five years of professional experience in applied radiation protection and at least three years of this professional experience should be in applied radiation protection work in a nuclear facility dealing with radiological problems similar to those encountered in nuclear power stations. Based on the limited radiation protection experience provided by the position of training manager and the lack of equivalency between the radiological problems encountered as a result of Navy versus commercial nuclear experience, it appeared that the C&HP Supervisor did not have the requisite experience to meet the intent of RG 1.8. Concern about the experience level of the C&HP Supervisor has been previously addressed by the NRC Region IV Office (298/8416-02).

   b. The experience level of the HP technicians was also considered weak. Fifteen HP technicians were employed, including two lead technicians (similar to foremen) and one ALARA coordinator. Nine of these technicians were in their present position for about one year and had no previous HP work experience.

   c. The use of HP technicians was contrary to ANSI N18.1-1971, which states that technicians in responsible positions shall have a minimum of two years experience in their speciality. Backshift HP coverage for August 1984 was provided by one technician each day. A review of the HP duty roster for August 1984 revealed that four of the nine HP technicians assigned to backshift coverage had less than two years of radiation protection experience. Additionally, a review of Special Work Permits (SWPs) issued in August 1984 revealed that seven of eight SWPs reviewed were prepared and approved by HP technicians with less than 2 years experience. This issue was discussed with the licensee and will remain unresolved pending follow-up by the NRC Region IV Office (298/84-21-12).

   d. Interviews with HP technicians revealed that they received no training on plant systems and no routine technical training in health physics issues. This was considered a weakness.

3. Discrepancies were found between TS, the Updated Safety Analysis Report (USAR), station procedures, and actual practices regarding the control of high radiation areas (HRAs).

   a. TS 6.3.4 states that each HRA shall be barricaded and conspicuously posted.

   b. The USAR states that HRAs will be locked or completely blocked off. (This is much more restrictive than TS 6.3.4.)

   c. HP Procedure 9.1.2.2, "Area Posting and Access Control," revision 6, states that each entrance or access point to a high radiation area shall be through either a locked door or a barricade and that this barricade may be a step-off pad if the HRA is contaminated. (This appears to be contrary to TS 6.3.4 in that a step-off pad by itself does not constitute a barricade.)

   d. On October 23, 1984, the inspector found the door to the reactor water cleanup pump room B propped open with a broom handle with no one working in the area. A survey map posted outside this room indicated that the general area radiation levels inside were 400 mrem/hr. Therefore, by definition in 10 CFR 20.202, this room was an HRA. The access point to this room was controlled with a step-off pad only.

   The apparent failure to provide an adequate procedure for the control of HRAs and the apparent failure to properly control an HRA were discussed with the licensee and will remain unresolved pending followup by the NRC Region IV Office (298/84-21-12).

4. The program for collecting and monitoring potentially contaminated trash had the potential to permit the uncontrolled release of limited quantities of low levels of contamination. Personnel interviews revealed that trash placed in "clean" barrels in the reactor building, turbine building, and radwaste building was typically removed from the plant and mixed with clean trash from the rest of the station. This trash was then surveyed for uncontrolled release prior to being taken to a local dump. This trash and other trash that may be suspected of being contaminated was usually surveyed with an E-140 radiation detection device. Although this instrument is capable of detecting radiation levels above 0.02 mR/hr, a limit of 0.1 mR/hr had been established in practice for determining whether trash is disposed in a controlled or uncontrolled manner. The limits for the uncontrolled disposal of trash were not clearly specified in station procedures; however, personnel interviews with the C&HP Supervisor, Health Physicist, and several HP technicians revealed that this 0.1 mR/hr limit for disposal of trash was clearly understood. Several HP technicians stated that although the limit for the uncontrolled disposal of trash was 0.1 mR/hr, they would segregate for controlled disposal any trash which had a radiation level clearly above background. The potential for failure to dispose of licensed material per the requirements of 10 CFR 20.301 was discussed with the licensee and will remain unresolved pending follow-up by the NRC Region IV Office (298/84-21-13).

5. Several deficiencies were noted in the program to solidify and transport radwaste.

   a. No procedures that had been reviewed, controlled, or approved by the licensee were available for the use of radwaste shipping casks, contrary to the requirements of 10 CFR 71.113. A set of vendor procedures for shipping casks commonly used by the licensee was found in the Health Physics Office. However, these procedures were not incorporated into the licensee's procedures, and interviews with plant personnel revealed that these vendor procedures were not typically used during the conduct of radwaste shipping activities.

   b. The licensee had not demonstrated that their radioactive waste meets the stability requirements of 10 CFR 61.56(b), nor was there available any program, schedule, or plan to meet these requirements. As required by 10 CFR 61.55, the 10 CFR 61.56(b) stability requirements must be demonstrated for class B waste. Review of records revealed that class B waste had recently been shipped by the licensee. This is contrary to 10 CFR 20.311 which requires that all wastes be prepared to meet the waste characteristic requirements in 10 CFR 61.56.

   c. 10 CFR 20.311 requires that a quality control program be conducted to ensure that the physical properties of radwaste conform to the requirements of 10 CFR 61.56. The quality control program established to meet these requirements was considered inadequate with regard to the solidification of radwaste. Specifically, after waste was solidified with cement in 55 gallon drums, the check to ensure that solidification was adequate consisted solely of a visual observation with no routine physical check for penetration. Additionally, no periodic or routine cement waste samples were analyzed apart from the full-scale solidifications. During a quality assurance audit of radwaste conducted in April 1984, a physical penetration check was conducted of a typical barrel of solidified waste at the request of the auditor. The result was that the rod used penetrated about six inches into the cement. There should have been no penetration for properly solidified radwaste.

   The inadequacies in the program to solidify and transport radwaste were discussed with the licensee and will remain unresolved pending follow-up by the NRC Region IV Office (298/84-21-14).

6. Weaknesses were found with the calibration and control of radiation monitoring equipment.

   a. In two instances, an extender radiation instrument was found not to be calibrated per procedure. HP Procedure 9.3.1.2.2, "Extended Probe-Extender Model 1000W," revision 0, requires that this instrument be calibrated on three points for each scale. Contrary to this requirement, calibrations done for instruments SN 15683 on June 15, 1984 and SN 15709 on August 31, 1984 were not done on three points for each scale. This issue was discussed with the licensee and will remain unresolved pending follow-up by the NRC Region IV Office (298/84-21-15).

b. RM-14 radiation monitors used for personnel and tool frisking were found to be source checked once per month as specified by procedure. Because of the fragility, the frequency of use, and the reliance placed on these instruments, the general industry practice is to source check them more frequently when in use.

CONCLUSIONS

Significant weaknesses were found to exist with the qualifications and experience of the Radiation Protection Manager and the health physics staff. The program for collecting and monitoring potentially contaminated trash was found to permit the uncontrolled release of licensed material. Program inadequacies also were noted in the control of high radiation areas, ensuring the solidification and stability of radwaste, the procedures for the use of radwaste shipping casks, and the calibration of radiation monitoring equipment. A notable strength was an above-average record of external radiation exposure over the past 6 years.

This area is rated Category Three.

PROCUREMENT

OBSERVATIONS

1. Procedure QAI-16, "Vendor Qualification," revision 8, was weak. Lack of adequate guidance in the procedure has resulted in the approval of vendors for the Approved Suppliers List with little or no assurance of their ability to supply quality material, components, or services. This was considered a weakness. For example:

   a. Certain vendors were qualified on the sole basis of a telephone conversation between the licensee's QA department and a vendor representative.

   b. A questionnaire completed by the vendor was used to qualify some suppliers.

   c. Certain suppliers of original equipment have remained on the Approved Suppliers List without additional quality controls to provide continuing assurance of the supplier's ability to supply quality material, components, or services.

2. Some vendors remained qualified as approved suppliers after a review of their QA programs showed that they did not comply with the applicable portions of 10 CFR 50, Appendix B. This was a significant weakness. Examples are:

   a. A vendor was approved to supply replacement parts for the high pressure coolant injection (HPCI) system. The basis for approval was a review of the vendor's QA manual. The QA engineer who reviewed this manual reported deficiencies in the document control system; in the control of purchased material, equipment, and services; in the identification and control of materials, parts, and components; in the inspection program; in test control; in the corrective action systems; and in QA

records. Despite these deficiencies, the licensee approved this vendor without establishing any additional quality controls.

b. A vendor was approved to supply replacement parts and repairs to existing equipment for pressure transducers in the control rod drive (CRD) system. The basis for this approval was a review of the vendor's QA manual. The QA engineer who reviewed this manual reported deficiencies including: the failure to address special process controls such as welding qualification, no internal quality auditing program, minimal product testing, inadequate product testing procedures, and no established programs for record storage and retention. In addition, the licensee's review revealed that the vendor's QA manager was not familiar with the nuclear industry or 10 CFR 50, Appendix B, and had not worked with any nuclear utility to supply safety-related parts. Despite these deficiencies, the licensee approved this vendor without establishing any additional quality controls.

The continued qualification of, and procurement from suppliers with known QA program deficiencies was discussed with the licensee and will remain unresolved pending follow-up by the NRC Region IV Office (298/84-21-16).

3. ANSI N45.2.13-1974, Section 10.2, requires that a method be provided to verify the validity of vendor certificates of conformance and the effectiveness of the certification system, such as a QA program implementation audit at the vendor's facility or independent inspection or test of the items. Examples where vendors were approved to provide safety-related parts or services without the licensee verifying the validity of the accompanying certificates of conformance include:

   a. A vendor was approved to provide replacement parts and repairs for the emergency diesel gererators based only on an accompanying certificate of conformance (Purchase Orders (POs) 232226, 232402, 200293, and 228370).

   b. A vendor was approved to supply replacement parts and repairs for the vital power DC inverters based only on an accompanying certificate of conformance (PO 214095).

   The failure to verify the validity of vendor certificates of conformance was discussed with the licensee and will remain unresolved pending follow-up by the NRC Region IV Office (298/84-21-17).

4. ANSI N45.2.2-1972, Section 5.2.2, establishes additional receipt inspection requirements for items not inspected or examined at the source. These additional examinations include such items as physical dimensions, weld preparation, workmanship, lubricants and oils, and electrical insulation. Interviews and a review of CNS Procedure 1.5, "Receiving," revision 0, revealed that the licensee did not perform these additional inspections as required by the standard. The failure to provide adequate receipt inspection of purchased items was discussed with the licensee and will remain unresolved pending follow-up by the NRC Region IV Office (298/84-21-18).

5. Inspection of the warehouse revealed that deficiencies existed in the care and storage of spare parts.

   a. ANSI N45.2.2-1972, Section 6.4, requires proper maintenance of spare parts during storage. Interviews and a tour of the warehouse revealed that some items in storage did not have all covers, caps, plugs, or other closures intact; desiccants were not periodically checked; and rotating electrical equipment was not periodically given insulation-resistance checks. Examples of components in storage that were not protected from damage included:

      (1) CNS-2887, 20 inch pressure seal gaskets for the residual heat removal system protective coverings were torn or removed.

      (2) CNS-459, CRD system solenoid valve ports had no protective caps.

      (3) CNS-13859, 1-inch valve, had tape on the valve openings with desiccant inside. The tape on one of the valves was torn. In addition, there were no humidity indicating devices on any of the valves.

   b. ANSI N45.2.2-1972, Section 6.3.3, requires the licensee to store hazardous chemicals, paints, solvents, and other material of a like nature in areas that are not in close proximity to important nuclear plant items. A tour of the warehouse revealed that hazardous materials such as dry cleaning fluids and lubricating oils were stored adjacent to important nuclear plant items such as resins and valves. The apparent failure to provide proper care of items in storage (as discussed in 5.a above) and to provide the proper storage of hazardous material was discussed with the licensee and will remain unresolved pending follow-up by the NRC Region IV Office (298/84-21-19).

   c. CNS Procedure 1.6, "Marking and Tagging," revision 0, required that parts stored in the warehouse be tagged as ACCEPTED, HOLD, REJECTED, or SPECIAL NUCLEAR MATERIAL. Although no programmatic problem was identified, a tour of the warehouse revealed that some items were not tagged as required. Examples included:

      (1) Ringsets (CNS-3731) for the emergency diesel generator system were not tagged.

      (2) A safety-related mechanical shock arrestor (CNS-8116) was not tagged.

      (3) Two rows of shelves containing various types and sizes of stainless steel fittings left over from construction were not tagged. These items could be used in safety-related applications.

CONCLUSIONS

Significant weaknesses identified in the area of procurement were the lack of adequate procedural guidance that resulted in approving vendors with little or no assurance of their ability to supply quality material, components, or services; the lack of a program to verify the validity of vendor certificates of conformance, and the lack of an adequate receipt inspection program.

Minor weaknesses existed in the care and storage of spare parts.

This area was rated Category Two.

MAINTENANCE

OBSERVATIONS

1. There appeared to be no effective control of vendor manuals used in safety-related maintenance.

   a. The Engineering, Maintenance, Instrumentation and Control (I&C), and Operations organizations each maintained their own vendor manual library, but they failed to ensure that the manuals contained complete and accurate information on safety-related components and activities. A limited sample of manuals in different locations revealed several examples in which manuals for safety-related components varied in important instances from those found in the Engineering Services Library. Two significant examples were:

      (1) The Engineering Services Library's copy of Operation and Maintenance Instructions for Hydraulic Control Unit (HCU) Part Nos. 729E950G1 through G6, GE Manual GEK-9582A, on page 5-24, had a change incorporated by GE Service Information Letter (SIL) 373 for the actuating pressure range of the scram actuator valves. This change was not entered in the GE HCU manuals located in the mechanical, electrical and I&C maintenance shops. This GE manual was used for safety-related maintenance on the HCU scram pilot valves and scram actuator valves. It was referenced in licensee procedures for accomplishing work on the HCU and scram valves and was prescribed in at least one safety-related Maintenance Work Request (MWR-84-0018) for replacement and repair of scram pilot valves. Additionally, although the change had been made to the manual, SIL 373 could not be located in the Engineering Services Library or the maintenance shops.

      (2) The mechanical maintenance shop's copy of Maintenance Manual for Control Rod Drive (CRD) Pump (Worthington) contained a letter listing prescribed run-out tolerances and wear ring clearances for the CRD pumps. This information was not entered in the copy of the manual located in the Engineering Services Library.

b. The licensee relied heavily on the use of vendor manuals for the performance of safety-related maintenance, but correction of deficiencies in vendor manual control was not planned for completion until 1986 as a licensee commitment to the actions required by NRC Generic Letter 83-28. Technically correct procedures are required by Technical Specification (TS) 6.3.3.c for performance of maintenance on safety-related systems, and the continued use of inconsistent and incorrect vendor technical manuals as maintenance procedure references is an unacceptable practice. This is particularly true for reactor trip system components such as the HCU. The apparent lack of timely action by the licensee to identify and correct discrepancies in vendor manuals is considered a significant weakness.

c. The extent of the weaknesses in the control of vendor technical manuals appeared to be poorly understood by corporate management. This lack of understanding was evidenced by the NPPD initial response to Generic Letter 83-28. A letter from L.G. Kuncl (NPPD) to D.G. Eisenhut (NRC), "Response to Generic Letter 83-28...," dated November 4, 1983, states in Enclosure (1), paragraph 3.4.4 (page 3-28): "Vendor manuals at CNS are controlled distribution documents and are presently the responsibility of the CNS Engineering Department." Interviews and examination of documents revealed that vendor manuals are not controlled documents (as discussed above).

The failure to establish control of safety-related vendor information used as references for safety-related maintenance procedures, particularly those pertaining to reactor trip system components, has been discussed with the licensee and will remain unresolved pending follow-up by the NRC Region IV Office (298/84-21-20).

2. A review was conducted of the calibration program for measuring and test equipment (M&TE) within the mechanical, electrical, and I&C groups. Interviews and record reviews revealed that there were no procedures for calibration and control of mechanical M&TE such as micrometers, dial indicators and calipers. Although this deficiency was identified to plant management in a CNS internal QA audit dated October 5, 1983 (Audit 83-21), a procedure for calibrating mechanical M&TE was not scheduled to be issued until December 1984. In spite of the audit finding, CNS has been routinely using mechanical MT&E devices without required calibration procedures for the accomplishment of safety-related mechanical maintenance for the past year

ANSI N18.7-1972, section 5.3.6, states that procedures shall be provided for calibration of M&TE. The apparent failure to provide the necessary procedures to control the calibration of mechanical M&TE was discussed with the licensee and will remain unresolved pending followup by the NRC Region IV Office (298/84-21-21).

3. The use of shop guides by I&C technicians to supplement maintenance procedures for plant instrumentation was considered a weakness. These guides did not receive the same level of review, control, and approval as plant procedures. Maintenance Procedure (MP) 7.0.1, permits the use of shop guides to accomplish work on safety-related instrumentation "as necessary," and further states, "The information found in a shop guide may consist of suggested methods of hooking up test equipment, guidelines

or manufacturers bulletins for the disassembly or repair of a component, etc. They will not contain any check-off lists nor require data to be recorded and therefore will not be made part of the work packages." Although MP 7.0.1 attempted to differentiate between shop guides and procedures, these guides were found to be quite prescriptive and detailed regarding the completion of safety-related maintenance and, therefore, were considered to be equivalent to maintenance procedures. Personnel interviews revealed that shop guides were commonly used for maintenance activities; however, no examples of their use were found because, as stated in MP 7.0.1, shop guides were not made part of the retained work package records.

The failure to control shop guides in the same manner as procedures appears to be contrary to TS 6.2.1.A.4 in that shop guides are used as maintenance procedures for safety-related maintenance but are not reviewed by the Station Operations Review Committee. This issue was discussed with the licensee and will remain unresolved pending follow-up by the NRC Region IV Office (298/84-21-22).

4. The computer-based Work Item Tracking system was considered to be a strength. The system was effectively administered to enhance the quality of maintenance planning, supervising, scheduling, and component identification.

CONCLUSIONS

Significant weaknesses identified were the lack of control of vendor manuals for safety-related equipment, the absence of procedures for calibration of mechanical measuring and test equipment, and the substitution of shop guides for procedures by I&C personnel.

A strength was identified regarding the Work Item Tracking System and its implementation.

This area is rated Category Two.

DESIGN CHANGES AND MODIFICATIONS

OBSERVATIONS

1. A review of the design change and modification program in CNS Engineering Procedure (EP) 3.4, "Station Design Changes," revealed several weaknesses as follows:

   a. Design verification as covered in ANSI N45.2.11, "Quality Assurance Requirements for the Design of Nuclear Power Plants", was not adequately addressed. Paragraph 6 of ANSI N45.2.11 discusses acceptable verification methods and states, in part, that "the results of design verification efforts shall be clearly documented." No guidelines were given in EP 3.4 for design verification and no documentation existed in about 30 minor design changes (MDCs) reviewed to demonstrate what was done by the reviewing engineer for design verification.

b. ANSI N45.2.11 design input requirements were not adequately addressed. Paragraph 3 of ANSI N45.2.11 provides a list of 28 design inputs required for consideration when accomplishing design work. EP 3.4 had only 10 of these on the design review checklist and provided no guidance for accomplishing engineering evaluations of these items. The apparent failure to implement proper procedures for design verification (as discussed in 1.a above) and design inputs as required by ANSI N45.2.11 was discussed with the licensee and will remain unresolved pending follow-up by the NRC Region IV Office (298/84-21-23).

c. No guidance for timely closure of MDCs was provided. A review of 50 open MDCs with plant modifications completed for over a year revealed that about half were still awaiting review of data and sign-offs, submittals of Updated Safety Analysis Report (USAR) changes, and issuance of Drawing Change Notices (DCNs) and Completion Reports.

2. Interviews with engineering personnel revealed an apparent lack of awareness of quality assurance standards (ANSI N18.7, ANSI N45.2 and associated daughter standards) that provide the basis for the design change and modification program. The training, as well as general exposure of engineering personnel to industry standards and commitments, was considered weak.

3. QA audits of design change control were considered weak. Design verification was identified as a deficiency in Audit G80-03 in November 1980 and in Audit 83-05 in February 1983. The licensee changed the affected procedures as a result of these audits but still did not incorporate the ANSI N45.2.11 requirements for design verification as discussed in observation 1.a. In addition, design input inadequacies discussed in observation 1.b had not been noted by QA.

4. The Nebraska Public Power District (NPPD) system for controlling drawings and aperture cards had the following weaknesses:

a. Control room drawings were not routinely marked to show that an MDC was in progress or had been completed. The drawings were not updated until new drawings were received from the General Office (GO). Operator awareness of a completed system modification was dependent on personal memory until an updated drawing was issued by the GO. Several months could pass before DCNs were issued and drawing changes were completed (see observation 1.c.).

b. Aperture cards at the station were not marked to indicate existence of open MDCs. The cards were eventually replaced by the GO when a DCN for the applicable MDC was incorporated.

c. The GO had no written procedure for control of drawings and aperture cards associated with open MDCs.

5. Safety evaluations had not been conducted, as required by 10 CFR 50.59, before hanging temporary lead shielding on systems or components discussed in the USAR. Documentation revealed that temporary lead shielding was installed on the recirculation pumps, the recirculation discharge lines, and the scram discharge volume line. Engineering calculations were

present for static overstressing of piping and components but no safety evaluations were documented. This was considered particularly significant because the licensee was informed of the applicability of 10 CFR 50.59 to safety evaluation requirements for temporary lead shielding installations by IE Information Notice 83-64 of September 29, 1983. This notice stated that lead shielding placed on safety-related systems should be analyzed for possible dynamic and static effects. The apparent failure to conduct safety evaluations as required by 10 CFR 50.59 was discussed with the licensee and will remain unresolved pending follow-up by the NRC Region IV Office (298/84-21-24).

CONCLUSIONS

Procedural weaknesses were noted in CNS Engineering Procedure 3.4 relative to compliance with ANSI N45.2.11 requirements and closure of minor design changes. Other weaknesses were found in awareness of commitments to industry standards, recognition by QA personnel of procedural compliance with ANSI N45.2.11, the General Office and station drawing control systems, and safety evaluations for temporary lead shielding installations.

This area was rated Category Two.

CORRECTIVE ACTION SYSTEMS

OBSERVATIONS

1. The principal plant-wide systems used to identify problems and to control the appropriate corrective actions were Maintenance Work Requests (MWRs), Quality Assurance (QA) Audit Reports, Non-Conformance Reports (NCRs), and the Commitment and Open Item Tracking system.

2. The corrective actions taken to prevent recurrence were not always effective. For example, the licensee was cited in December 1983 (Inspection Report 83-26) for performing plant modifications without an approved MDC. Corrective action to prevent recurrence of the deficiency described by the citation was inadequate because a licensee QA audit conducted in June 1984 identified 12 other modifications that had been started without an approved MDC. In addition, five NCRs had been written between October 10, 1984 and November 15, 1984 for performing plant modifications without an approved MDC.

3. The corrective action taken in response to Violation 83-26-03 was inadequate. This violation identified 17 MDCs for which the safety evaluations had not been reviewed by the Safety Review and Audit Board (SRAB) as required by TS 6.2.1.B.4.a. The licensee's response stated: "All MDCs are now reviewed by the SRAB and this review is documented." These 17 MDCs had still not been reviewed at the time of this appraisal.

   Criterion 16 of 10 CFR Part 50, Appendix B, requires timely corrective action and measures to prevent recurrence to be taken for identified deficiencies. The apparent failure to adequately implement this requirement

by taking measures to prevent recurrence (Observation 2) and timely corrective action (Observation 3) for deficiencies identified in the administration of Minor Design Changes will remain unresolved pending follow-up by the Region IV Office (298/84-21-25).

4. The NCR was the principal corrective action system used to assure identification, documentation, and followup of nonconforming conditions. A nonconforming condition was defined as a condition that was contrary to regulatory requirements or commitments during the startup, operation, and maintenance of the Cooper Nuclear Station (CNS). A review of NCRs revealed that NCRs which required an equipment modification to prevent recurrence of the nonconforming condition were being signed as completed before the MDC was completed. This practice had led to removing NCRs with significant safety implications from the system before the actual completion of corrective actions. An example where this occurred was NCR-2852, HPCI Gland Seal Condenser Lower Head Gasket, January 30, 1984. On the basis of MDC 84-146 being initiated the NCR was closed on August 14, 1984; however, the gasket required by the MDC had not been installed as of October 24, 1984. The closeout of NCRs before completing all actions to prevent recurrence of the nonconforming condition was discussed with the licensee and will remain unresolved pending follow-up by the Region IV Office (298/84-21-26).

5. LERs that involved personnel errors did not always discuss whether the error was caused by procedural non-compliance or by the lack of an adequate procedure. Discussion of these issues is required by 10 CFR 50.73 for all LERs involving personnel error. For example:

   a. LER 84-003, "Reactor Trip," failed to discuss the fact that the I&C technician had neither an approved procedure nor the shift supervisor's approval to troubleshoot the problem. In addition, the LER did not discuss whether the operator had failed to follow approved procedures or whether the approved procedures were adequate.

   b. LER 84-007, "Inoperable Standby Gas Treatment System," did not discuss whether the operators involved had failed to follow approved procedures or whether the approved procedures were adequate.

   The failure to provide required discussion in LERs for events resulting from personnel errors was discussed with the licensee and will remain unresolved pending follow-up by the Region IV Office (298/84-21-27).

6. The Commitment and Open Item Tracking System was the principal means for CNS management to track commitments to the NRC and to track CNS open action items, such as Institute of Nuclear Power Operations (INPO) evaluation findings, General Electric Service Information Letters, and American Nuclear Insurer audit findings. The system was not being used adequately to track commitments and open items. Some items were listed as closed when corrective action had not been completed. For example:

   a. The licensee's commitments to the NRC regarding recommendations S-6 SORC and S-7 SORC in Management Appraisal Report 50-298/EA82-46 were listed as completed on May 15, 1984, and October 23, 1984, respectively.

Observations 4 and 5 of the Committee Activities section of this report indicated that corrective actions in these areas have not been completed.

b. The licensee committed to the NRC to review procedures for the control of contractors on April 20, 1984. As described in Quality Assurance Observation 3, an inadequate review of these procedures was performed.

7. Interviews and a review of records revealed that the licensee did not periodically review the results of actions taken to correct deficiencies to determine whether those corrective actions taken were effective. This was considered a significant weakness.

CONCLUSIONS

Significant weaknesses identified were the failure to take effective corrective action to prevent recurrence of nonconforming conditions, the failure to complete all corrective actions before closing out an NCR or a commitment tracking system item, and the failure to periodically review the results of actions taken to correct deficiencies to determine their effectiveness.

This area was rated Category Two.

COMMITTEE ACTIVITIES

OBSERVATIONS

1. The Safety Review and Audit Board (SRAB) is the offsite review group required by Technical Specification (TS) 6.2.1.B. SRAB guidance and responsibilities were promulgated in a charter entitled, "SRAB Instructions and Guidelines," revision 0, issued August 1, 1984. This charter provided an explanation of the training program and procedures for SRAB membership, administration and operation. Overall, this document facilitated smooth operation of the SRAB and was considered a strength.

2. The SRAB's review of plant operations was weak. Reports documenting SRAB trips to Cooper Nuclear Station (CNS) indicated frequent failures to review all areas of plant operations. Instead, members concentrated on reviewing areas where they had specialized expertise. This weakness previously had been identified in Management Appraisal Report 50-298/EA 82-46; subsequently, the licensee had committed to the NRC to designate a member of the Station Operations Review Committee (SORC) to serve on the SRAB. No SORC member had been designated in writing to serve on the SRAB and overall SORC participation in the SRAB was inconsistent. Since the time this commitment was made, there have been 11 SRAB meetings, four of which were attended by SORC members. Although the SORC members were not specifically prepared to participate in SRAB discussions, interviews and a review of meeting minutes revealed that they provided valuable operational inputs not found in other SRAB meetings. No SRAB member had ever held an operator license for a boiling water reactor (BWR) or had received the equivalent training; this limited the SRAB's knowledge of plant operations.

3. The SORC is the onsite review group required by TS 6.2.1.A. SORC guidance and responsibilities were promulgated CNS Procedure 0.3, "Station Operations Review Committee", revision 0, issued September 28, 1984. This procedure was inconsistent with the SORC requirements identified in the TS. The inconsistencies included:

   a. There was no requirement for alternate SORC members to be designated in writing, contrary to TS 6.2.A.1.

   b. There was no requirement for SORC to report to the SRAB Chairman for review of specific items identified in TS 6.2.1.A.5.

   c. There was no requirement for the results of proposed tests and experiments to be reviewed by SORC, contrary to TS 6.2.1.4.

   d. The quorum requirements for SORC meetings were not specified, contrary to TS 6.2.1.A.3.

   e. All material reviewed by the SORC was not required to be identified in SORC meeting minutes and distribution of the minutes to the Assistant General Manager, Nuclear, was not required, contrary to TS 6.2.1.A.6.

   Management Appraisal Report 50-298/EA 82-46 identified a similar finding; subsequently, a commitment was made by the licensee to the NRC Region IV Office to correct inconsistencies between the CNS SORC procedure and TS by January 1, 1984.

4. The SORC did not review items of potential safety significance in committee meetings. Instead, items such as Licensee Event Reports (LERs), Non-Conformance Reports (NCRs), Design Changes, Special Test Procedures (STPs), and Special Procedures (SPs) were routed to individual SORC members in sequence for their review and approval. There was no record of any discussion among SORC members, as would be expected in a committee review. This weakness had been previously identified in Management Appraisal Report 50-298/EA 82-46. The licensee had committed to the NRC to require review of items of potential safety significance in committee. Additionally, SORC meeting minutes did not identify those reviews conducted outside the scheduled meetings. TS 6.2.1.A.6 requires that SORC meeting minutes include identification of all documents reviewed.

   The apparent deviations from commitments made to the NRC pertaining to SORC activities (discussed in Observation 2, 3, and 4 above) will remain unresolved pending follow-up by the Region IV Office (298/84-21-28).

5. The Quality Assurance (QA) audits of the SORC, conducted for the past 2 years, were weak. TS 6.2.1.B.7.a requires that audits be conducted under the cognizance of the SRAB to verify compliance with internal procedures and

applicable license conditions at least once each 24 months. QA audits 83-04 and 84-06 of SORC activities were limited to a review of the meeting minutes and the action item tracking system to determine if all reviewed items identified in the minutes as requiring further action were continued to completion. This approach did not verify that SORC was accomplishing all the requirements of TS 6.2.1.A and CNS procedures.

6. SRAB had not conducted all the required reviews and had not made the required reports to management in accordance with TS 6.2.1.B.4, which requires that the SRAB review certain problems and report to appropriate management on recommendations to prevent their recurrence. These problems include TS violations, indications of unanticipated deficiencies in safety-related systems, and significant operating abnormalities or deviations from expected performance of plant equipment that affect nuclear safety. The following events were not reviewed and reported on by the SRAB:

   a. The TS violation discussed in observation 7.a. below.

   b. The cause of the failure of an automatic power transfer that occurred after a reactor trip on August 8, 1984.

   c. The drifting in of three control rods from their full-power position, which was caused by leaking valves in the control rod drive system.

7. SORC did not review all TS violations and make the required reports to management. TS 6.2.1.A.4.f requires that the SORC investigate all TS violations and report recommendations to prevent recurrence to the Assistant General Manager, Nuclear and SRAB Chairman. The following TS violations were not properly reviewed:

   a. TS 6.3.4.A requires that high-radiation areas be barricaded and conspicuously posted. Audit 83-23 identified a high-radiation area that was not posted or barricaded. Prompt actions were taken to correct the problem, but the deficiency was documented only as an observation on the audit report.

   b. TS 6.2.1.B.6 requires that SRAB meeting minutes be issued within 1 month of the meeting. Audit 84-02 identified a deficiency where SRAB Meeting No. 77 minutes were not issued for 3 months. This problem was documented by an audit finding report, but the SORC did not review the finding.

   c. TS 6.2.1.B.4.a requires that the SRAB review 10 CFR 50.59 safety evaluations to verify that they do not constitute an unresolved safety question. Audit 83-01 identified the SRAB's failure to conduct these reviews, but failed to document it as a TS violation.

An underlying cause of these deficiencies appeared to be that the corrective action system failed to include TS 6.0 violations as requiring appropriate review and internal reporting. Only those TS violations that caused an LER received the proper review and reporting.

The apparent failure of the SORC and SRAB to perform the reviews required by TS 6.2.1 (discussed in Observations 6 and 7) will remain unresolved pending follow-up by the NRC Region IV Office (298/84-21-29).

8. CNS Engineering Procedure 3.3, "10 CFR 50.59 Reportability Analysis", provided an effective summary of 10 CFR 50.59 safety analysis requirements. Also, a training session on 10 CFR 50.59, its importance, and its implementation was recently completed for members of the SORC and the SRAB. Members of both committees demonstrated thorough knowledge of 10 CFR 50.59 requirements during interviews. Some deficiencies were noted, however, in the procedures governing the inputs to the 10 CFR 50.59 analysis process. Examples of these deficiencies included:

   a. CNS Engineering Procedure 3.5, "Special Test Procedure (STP)/Special Procedures (SP)," revision 0, required that only STPs and SPs for nuclear safety-related systems be analyzed in accordance with 10 CFR 50.59. This excluded those STPs and SPs for non-nuclear safety-related systems that are discussed in the Updated Safety Analysis Report (USAR). 10 CFR 50.59 requires consideration of these items in addition to nuclear safety-related procedures. A review of records revealed that, in practice, all STPs and SPs were receiving 10 CFR 50.59 analysis regardless of the systems they affected.

   b. CNS Operations Procedure 2.02, "Operating Logs and Reports," revision 0 did not require 10 CFR 50.59 analysis to be conducted for jumpers, lifted leads, or bypasses to systems discussed in the USAR (see Plant Operations, Observation 2.a).

CONCLUSIONS:

The detailed charter of the SRAB was considered a strength.

Weaknesses identified included the failure of both committees to review some TS violations and make required reports to management, inconsistencies between the TS requirements and the SORC procedure, reviews conducted by the SORC outside of a committee forum of items with potential safety significance, the SORC meeting minutes, QA audits of SORC, a lack of SRAB expertise in the area of plant operations and inadequate procedural requirements for 10 CFR 50.59 safety analyses.

This area was rated Category Two.

UNRESOLVED ITEMS

An unresolved item is a potential enforcement finding which requires additional consideration by the NRC Regional office.

Area	Observation Number	Subject
Plant Operations	1	Apparent failure to comply with TS requirements for demonstrating operability and providing adequate surveillance procedures for both the station battery and the SGT system (298/84-21-01).
Plant Operations	2.a	Apparent failure to provide adequate control over the installation of jumpers and bypasses (298/84-21-02).
Plant Operations	2.c	Apparent failure to meet a commitment to NUREG 0737, item I.C.6 (298/84-21-03).
Plant Operations	3	Apparent failure to provide adequate control for safety related operating procedures (298/84-21-04).
Plant Operations	4	Apparent failure to meet a commitment to develop and utilize shift turnover checklists (298/84-21-05).
Plant Operations	5	Apparent failure to meet a commitment to NUREG 0737 for limiting the maximum hours worked by station licensed operators (298/84-21-06).
Training	2	Apparent failure to implement a training program for non-operator training as required by Section 5.1 of ANSI N18.1-1971 (298/84-21-07).
Quality Assurance	1.a	Lack of an approved program for QC inspector certification responsibilities (298/84-21-08).
Quality Assurance	2	Apparent failure to properly report deficiencies noted during audits (298/84-21-09).
Quality Assurance	3	Apparent failure of QA audits to address the objectives specified in the QA program (298/84-21-10).
Radiological Controls	2.c	The use of health physics technicians with less than two years experience to prepare and approve special work permits and to provide independent back shift health physics coverage (298/84-21-11).

Radiological Controls	3	Apparent failure to provide an adequate procedure for control of HRAs and the apparent failure to properly control HRAs (298/84-21-12).
Radiological Controls	4	Potential for failure to dispose of licensed material per the requirements of 10 CFR 21 298/84-21-13).
Radiological Controls	5	Inadequacies in the program to solidify and transport radwaste (298/84-21-14).
Radiological Controls	6.a	Deficiencies in calibration of radiation monitoring instruments (298/84-21-15).
Procurement	2	Apparent failure to take corrective action for vendors with identified QA program deficiencies (298/84-21-16).
Procurement	3	Apparent failure to verify the validity of vendor certificates of conformance (298/84-21-17).
Procurement	4	Apparent failure to provide adequate receipt inspection of purchased items (298/84-21-18).
Procurement	5.a 5.b	Apparent failure to provide proper care of items in storage; failure to provide the proper storage of hazardous material (298/84-21-19).
Maintenance	1	Apparent failure to establish control of safety-related vendor information used as references for safety-related maintenance procedures, particularly those pertaining to reactor trip system components (298/84-21-20).
Maintenance	2	Apparent failure to provide the necessary procedures to control the calibration of mechanical M&TE (298/84-21-21).
Maintenance	3	Apparent failure to control and review essential shop guides in the same manner as safety-related procedures (298/84-21-22).
Design Changes and Modifications	1	Apparent failure to implement proper procedures for design verification and design inputs as required by ANSI N45.2.11 (298/84-21-23).

Design Changes and Modifications	5	Apparent failure to conduct safety evaluations as reqired by 10 CFR 50.59 (298/84-21-24).
Corrective Action Systems	2, 3	Apparent failure to take adequate corrective action to prevent recurrence of nonconforming conditions; the apparent failure to review identified MDC safety evaluations (298/84-21-25).
Corrective Action Systems	4	The close-out of NCRs before completing all actions to prevent recurrence of the nonconforming condition (298/84-21-26).
Corrective Action Systems	5	Apparent failure to provide required discussions in LERs of events resulting from personnel errors (298/84-21-27).
Committee Activities	2, 3, 4	Apparent failure to designate a SORC member as a member of SRAB; apparent failure to correct the inconsistencies between the SORC procedure and TS requirements; appa ent failure of the SORC to review items of potential safety significance in committee (298/84-21-28).
Committee Activities	6, 7	Apparent failure of SRAB to conduct the required reviews and make necessary recommendations to management; apparent failure by SORC to review all TS violations (298/84-21-29).

MANAGEMENT EXIT MEETING

An exit meeting was conducted on November 16, 1984, at the Cooper Nuclear Station. The licensee's representatives are identified in Appendix A. The scope of the inspection was discussed, and the licensee was informed that the inspection would continue with further in-office data review and analysis by team members. The Team Leader discussed the issuance of an inspection report and advised that the team would draw a conclusion for each functional area inspected and rate the management controls for each area in accordance with the Systematic Assessment of Licensee Performance (SALP) Categories. The licensee was informed that a written response may be requested for any area designated as Category Three. The licensee was also informed that some of the observations could become potential enforcement findings. These would be presented to the NRC Region IV Office for followup. The team members presented their observations for each area inspected.

Design Changes and Modifications	5	Apparent failure to conduct safety evaluations as reqired by 10 CFR 50.59 (298/84-21-24).

APPENDIX A

PERSONS CONTACTED

The following lists of persons contacted during this inspection. Other technical and administrative personnel were also contacted.

General Office, Nuclear Power Group (NPG)

*General Manager
*Assistant General Manager-Nuclear
Technical Staff Manager
Senior Staff Engineer
*Nuclear Services Division Manager
Quality Assurance Division Manager
*Quality Assurance Manager, Columbus General Office
Senior Quality Assurance Engineer
Quality Assurance Specialist
Environmental Manager
Mechanical/Civil Engineering Supervisor
SRAB Administrator
Safety Review and Audit Board Administrator
Electrical and I&C Engineering Supervisor
Records Supervisor
Records Analyst
Records Control Specialist
Nuclear Licensing and Safety Department Manager
Nuclear Licensing and Safety Department Manager Engineer II
Engineering Technician
Lead Draftsman
Lead Electrical Engineer
Lead Mechanical Engineer
Mechanical Engineer
*Nuclear Licensing and Safety Manager
Emergency Planning Coordinator

Cooper Nuclear Station (CNS)

*Nuclear Operations Division Manager
*Technical Staff Manager
*Training Manager
*Technical Manager
*Operations Manager
*Administrative Services Manager
*Chemistry and Health Physics (C&HP) Supervisor
*Computer Applications Supervisor
*Plant Engineering Supervisor
*Reactor Engineering Supervisor
*Maintenance Supervisor
*I&C Supervisor
*Operations Supervisor
*Electrical Supervisor
*Maintenance Planner/Scheduler
*Surveillance Coordinator

*Mechanical Supervisor
*Quality Assurance Manager, CNS
Senior Quality Assurance Specialist
Quality Assurance Specialist
Project Engineers (3)
Assistant to C&HP Supervisor
Health Physicist
Lead HP Technician
HP Technicians (3)
ALARA Coordinator
Control Room Supervisor
Reactor Operators (4)
Shift Technical Advisors (2)
Mechanical Engineers (2)
Plant Chemist
Data Coordinator
Plant Engineering Lead Mechanical Engineer
Reactor Engineering Lead Reactor Engineer
Plant Engineering Lead Electrical/I&C Engineer
Senior Technical and Radiological Advisor
Engineering Specialists (3)
Engineering Service Clerk
*Regulatory Compliance Specialist
*Warehouse Foreman
Material Controller (2)
*Administrative Services Manager
Purchasing/Materials and Accounting Supervisor
Purchasing Analyst
Material Controls Supervisor
Warehousemen (2)
Emergency Plan Coordinator
Craftsmen (6)
*Operations Training Supervisor
C&HP Instructor
I&C and Electrical Instructor
Mechanical Maintenance Instructor

* Attended exit meeting on November 16, 1984.

DOCUMENTS EXAMINED

The following lists the categories of documents examined. Those specific documents referenced in the report are listed by title and the most recent revision, if applicable, where they first appear.

Technical Specifications (TS)
CNS Procedures
Administrative Services Procedures
Power Operation Procedures
CNS Engineering Procedures
Instrumentation Operating Procedures
Surveillance Procedures
Maintenance and Calibration Procedures
Health Physics Procedures
CNS Training Program Procedures Specifications
Updated Safety Analysis Report
CNS Quality Assurance Instructions (QAI)
CNS Quality Assurance Plans (QAP)
CNS Quality Assurance Program for Operation
Safety Review and Audit Board Instructions and Guidelines
Bypass Log
Licensee Event Reports (2 yrs)
SORC Meeting Minutes (2 yrs)
Management Appraisal Report 50-298/EA 82-46 and NPPD Response of August 13, 1983
SRAB Meeting Minutes (2 yrs) and Agenda
SRAB Trip Reports on Site Visits
CNS Commitment Tracking Documents
Special Test Procedures (2 years)
Special Procedures (2 years)
Minor Design Changes (MDC)
Records Administration Department Instructions
Nuclear Engineering Department (NED) Administrative Instructions
NED Manual of Procedures and Instructions
Maintenance Quality Control Procedures
QC Inspector Certification Records
Auditor Qualification and Training Records
Maintenance Work Requests
Surveillance Procedures
Clearances Orders
Surveillance Records
Overtime Authorization Sheets
Station Operator Logs
Shift Turnover Sheets
Health Physics Instrument Calibration Records
TLD Quarterly Check Data
Special Work Permits
Radwaste Shipment Records
Operator Training Records
Non-Operator Training Records

Training Lesson Plans
Maintenance Work Requests
Administrative Procedures
Surveillance Procedures
Operating Procedures
Nonconformance Reports (NCR)
Licensee Event Reports (LERs)
Quality Assurance Audits, Summary and Detailed
Quality Assurance Surveillance Reports
NCR Trend Analysis Report
Licensee Correspondence to NRC
Quality Assurance Vendor Audits
Approved Suppliers List
Purchase Orders and Requisitions

APPENDIX B

ABBREVIATIONS

AP	Administrative Procedure
ANSI	American National Standards Institute
ASME	American Society of Mechanical Engineers
BWR	Boiling Water Reactor
CFM	Cubic Feet per Minute
CFR	Code of Federal Regulations
C&HP	Chemistry and Health Physics
CNS	Cooper Nuclear Station
CRD	Control Rod Drive
DCN	Drawing Change Notice
DVR	Deviation Report
EP	Engineering Procedure
FSAR	Final Safety Analysis Report
GE	General Electric
GET	General Employee Training
GO	General Office
HCL	Hydraulic Control Unit
HEPA	High Efficiency Particulate Air
HP	Health Physics
HPCI	High Pressure Coolant Injection
HRA	High Radiation Area
I&C	Instrumentation and Control
IEEE	Institute of Electrical and Electronic Engineers
INPO	Institute of Nuclear Power Operations
LER	Licensee Event Report
MDC	Minor Design Changes
M&TE	Measuring and Test Equipment
MWR	Maintenance Work Request
NCR	Nonconformance Report
NPPD	Nebraska Public Power District
NRC	Nuclear Regulatory Commission
NTD	Nuclear Training Department
NUREG	Nuclear Regulatory Guide
NSR	Nuclear Safety Related
OJT	On-the-Job Training
OP	Operations Procedure
PAS	Performance Appraisal Section
PO	Purchase Order
PR	Purchase Requisition
QA	Quality Assurance
QAI	Quality Assurance Instruction
QAP	Quality Assurance Procedure
QC	Quality Control
QCI	Quality Control Instruction
RCIC	Reactor Core Isolation Cooling
RCS	Reactor Coolant System
RG	Regulatory Guide

ABBREVIATIONS

RO	Reactor Operator
RPM	Radiation Protection Manager
SALP	Systematic Assessment of Licensee Performance
SGT	Standby Gas Treatment
SP	Surveillance Procedure
SP	Special Procedure
SRO	Senior Reactor Operator
STP	Special Test Procedure
SWP	Special Work Permit
TLD	Thermoluminescent Dosimeter
TS	Technical Specifications
USAR	Updated Safety Analysis Report
VDC	Volts, Direct Current