UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
611 RYAN PLAZA DRIVE, SUITE 400
ARLINGTON, TEXAS 76011-8064

JAN - 9 1996

Omaha Public Power District
ATTN: T. L. Patterson, Division Manager
Nuclear Operations
Fort Calhoun Station FC-2-4 Adm.
P.O. Box 399, Hwy. 75 - North of Fort Calhoun
Fort Calhoun, Nebraska 68023-0399

SUBJECT: NRC INSPECTION REPORT 50-285/95-18

On December 22, 1995, NRC Inspection Report 50-285/95-18 was issued. Pages 13-32 and Attachment 1 were inadvertently omitted from the report. We are enclosing those pages to be added to the original document issued. We regret any inconvenience this may have caused.

Sincerely,

Thomas P. Gwynn, Director
Division of Reactor Safety

Docket: 50-285
License: DPR-40

Enclosure:
As stated

cc w/enclosure:
Winston & Strawn
ATTN: Mr. James R. Curtiss
1400 L. Street, N.W.
Washington, D.C. 20005-3502

Washington County Board
of Supervisors
ATTN: Jack Jensen, Chairman
Blair, Nebraska 68008

9601160290 960109
PDR ADOCK 05000285
Q PDR

Nebraska Department of Health
ATTN: Cheryl Rogers, LLRW Program Manager
Environmental Protection Section
301 Centennial Mall, South
P.O. Box 95007
Lincoln, Nebraska 68509-5007

Nebraska Department of Health
ATTN: Dr. Mark B. Horton, M.S.P.H.
Director
P.O. Box 950070
Lincoln, Nebraska 68509-5007

Fort Calhoun Station
ATTN: James W. Chase, Manager
P.O. Box 399
Fort Calhoun, Nebraska 68023

bcc to DMB (IE01)

bcc distrib. by RIV:
L. J. Callan
MIS System
Project Engineer (DRP/A)
Branch Chief (DRP/TSS)
Leah Tremper (OC/LFDCB, MS: TWFN 9E10)
M. Johnson, NRR
Resident Inspector
Branch Chief (DRP/A)
RIV File
Senior Resident Inspector - Cooper

DOCUMENT NAME: R:\ FC\FC518RP.EEC
To receive copy of document, indicate in box: "C" = Copy without enclosures "E" = Copy with enclosures "N" = No copy

SRA	E	D:DRS		PBA:DRP	N	D:DRS	N
EECollins:lmb		TPGwynn		JPellet		TPGwynn	
01/9/96		01/8/96		01/8/96		01/9/96	

w/ comments OFFICIAL RECORD COPY

140023

bcc to DMB (IE01)

bcc distrib. by RIV:

L. J. Callan	Resident Inspector
MIS System	Branch Chief (DRP/A)
Project Engineer (DRP/A)	RIV File
Branch Chief (DRP/TSS)	Senior Resident Inspector - Cooper
Leah Tremper (OC/LFDCB, MS: TWFN 9E10)	
M. Johnson, NRR	

DOCUMENT NAME: R:_FC\FC518RP.EEC

To receive copy of document, indicate in box: "C" = Copy without enclosures "E" = Copy with enclosures "N" = No copy

SRA	E	D:DRS		PBA:DRP		D:DRS	
EECollins:lmb		TPGwynn		JPellet		TPGwynn	
01/ /96		01/ 8/96		01/ 8/96		01/9 /96	

w/ comm OFFICIAL RECORD COPY

The team reviewed system engineering documentation of system walkdowns and found that the system engineers were identifying problems. The system engineering report cards provided an effective method for problem identification. The team considered the system engineering report cards to be a strength.

The licensee routinely conducted performance enhancement plan self-assessments of engineering. Each functional area was reviewed by an assessment team composed of plant staff members and a manager. The results of these self assessments became an input to a quarterly trend report which became the method used to identify problem areas. In addition, these reports identified the department responsible for resolving specific problems and provided a measure of the department's effectiveness in resolving the issue. The team considered this self assessment method to be effective.

The engineering change notice, engineering assistance request and recently instituted condition reporting programs were found to be substantial inputs to the problem identification process. Engineering and other plant departments used these documents to identify areas of concern.

Overall design, systems, and special services engineering were found to be effective in identifying problems. Exceptions to this included the failure to write a timely incident report for a design deficiency in the control room air conditioning system and the failure to provide timely notification to operations regarding revised lower ambient air temperature limits for the emergency diesel generator.

Based on this inspection, the team recommends normal inspection effort in this area.

3.2.2 Problem Resolution

The team conducted in-office review and assessment of both NRC and licensee documents relevant to engineering problem resolution. This review found that problem resolution was often delayed or incomplete. Examples included the control room air conditioning upgrade, long-standing problems with reactor coolant pumps, and problems with the raw water/component cooling water systems. Raw water pump trips caused by the buildup of sand had also been a continuing problem that had not had a timely resolution. Also, the team found that outside review committees had questioned the thoroughness of root-cause analyses. The NRC engineering team inspection found instances where engineering assistance request resolutions had been delayed, the effects of high ambient temperature on the operability of the emergency diesel generators had not been accurately communicated to plant operations, and that technical resolution to operator work arounds had not been timely. The team preliminarily recommended that the NRC increase inspection effort in this area.

On site, the team found that design engineering had effectively addressed numerous plant problems. Examples included the control room air conditioning modification, fire protection upgrades, the replacement of obsolete 4160 volt circuit breakers, the emergency diesel generator air start modification, the

upgrade of the instrument air system, the minimization of reactor vessel weld fluence by considering this effort during the performance of fuel reload analyses, and control room habitability impacts from chemicals at a nearby processing plant. Also, in the area of plant instrumentation inaccuracies and their effect on instrument calibration and setp ints, design engineering had an effective program to assure that the safety and analytical limits of plant operation were not exceeded.

The team considered, however, that engineering resolution of some problems had been neither timely nor effective. Examples included the long-standing problem of raw water pump trips, a continuing weakness in attention to detail when performing 10 CFR 50.59 screening reviews, a known weakness in the field implementation of engineering instructions for ASME Section XI repairs, and untimely identification and removal of a large quantity of sand from a reactor coolant pump seal thermal barrier cooler. Also, some operator work arounds, which were long-standing design deficiencies, had just recently been addressed for resolution. In addition, the team considered that the issue involving the resolution of a problem with the governor control on Emergency Diesel Generator 1 (NRC Inspection Report 50-285/95-17) was another example where engineering was not timely in resolving a potential safety significant issue.

Overall, the team considered, that once identified, the licensee usually effectively addressed problems. Some known performance issues and long-standing equipment problems were not resolved in a timely manner or had been ineffectively addressed.

Based on this inspection, the team recommends increased inspection in this area.

3.3 Quality of Engineering Work

The team conducted in-office review and assessment of both NRC and licensee documents relevant to engineering work quality. This review found the overall quality of engineering work to be generally high, but exceptions were noted in several areas. The engineering evaluation of raw water pump seal water problems did not address the effect of river water on pump seal life. While system engineering training was found current, the engineering team inspection noted design engineering training to be lagging, especially in the electrical and reactor engineering areas. Also noted was a lack of attention to detail when conducting 50.59 safety evaluations, and the absence of diagnostic testing of air-operated valves. The team preliminarily recommended that the NRC maintain normal inspection effort in this area.

During the onsite inspection, the team assessed the effectiveness of engineering in providing plant support, reviewed design change packages and calculations, and assessed the quality of vendor technical information. Examples of engineering work were sampled by field observation, review of applicable procedures and engineering documentation, and discussion of engineering work with the engineers involved in that work.

The team found in reviewing completed engineering change notices, engineering assistance requests, incident reports, and modifications that the engineering discipline showed a strong technical capability. Design engineering had developed a fuel reload analyses, plant transient analyses, and the associated reactor physics operation curves. The team observed both completed and in-progress modifications (including the control room air conditioning modification, fire protection upgrades, the 4160 volt breaker replacement, the emergency diesel generator air start modification, the upgrade of the instrument air system) where design engineering provided significant input. Engineering work was noted to be generally of high quality.

The extent of design engineering involvement with operations, maintenance, and systems engineers was reviewed. The practice during the past two outages of having design engineers and supervisors work as a part of the in-plant staff during refueling outages provided good design engineering staff insight of plant activities and problems. The team considered that design engineering's involvement in plant activities was appropriate.

Overall, the quality of engineering work was found to be very good. Based on this inspection the team recommends reduced inspection effort for this area.

3.4 Programs and Procedures

The team conducted in-office review and assessment of both NRC and licensee documents relevant to engineering programs and procedures. This review indicated that engineering programs and procedures appeared to be well developed. The team preliminarily recommended that the NRC maintain normal inspection effort in this area.

During the onsite inspection, the programs and procedures applicable to engineering work were reviewed and the implementation of those procedures was examined.

Engineering programs and procedures were generally found to be highly developed. To assure consistency among procedures, the licensee assigned specific personnel to review all engineering procedures. The special services engineering group had program responsibility for activities such as steam generator eddy current testing, the erosion/corrosion control program, in-service inspection and testing to the ASME code.

The team found that the engineering assistance request process had not always been fully effective. From interviews, the team determined that some request initiators did not consider that their requests were always resolved in a timely manner. Also, the team determined that the backlog of open engineering assist requests had increased from 1993 to July 1995, at which time a concerted effort by engineering management was made to close a number of these requests. The team noted that one engineering assistance request, initiated in April 1995 and involving the controls and position indication for the emergency diesel generator governors, was not recognized as a safety significant issue. Due to a lack of timely resolution of this issue, one emergency diesel generator remained in a degraded condition during plant operation.

The team determined from interviews that some processes, such as the engineering change notice process, could be more efficient, and consequently would better support the plant. The licensee stated that they planned to review this process to identify how the process could be improved.

Overall, the engineering programs and procedures were well developed. The performance in this area was similar to that noted in the in-office review. Based on this inspection the team recommends normal inspection effort in this area.

3.5 Conclusions and Recommendations

Overall, the team concluded that the performance of engineering was very good. The team recommends normal inspection effort, in the aggregate, for the area of engineering, but recommends increased inspection in the area of problem resolution.

4 MAINTENANCE

4.1 Safety Focus

The team conducted an in-office review and assessment of both NRC and licensee documents relevant to the maintenance area. Based on this review, the team concluded that outage planning was strong, as evidenced by the license's ability to smoothly enter the most recent refueling outage early. The team was unable to reach a preliminary conclusion concerning inspection needs in this area due to the need to further assess licensee practices in setting priorities for maintenance work, including the consideration of shutdown risk, communication of management expectations, management oversight and involvement in decision making, and maintenance department coordination with other departments.

During the onsite inspection, the team observed work activities, and attended emergent work meetings, plan of the day meetings, condition review group meetings, daily work planning meetings, and work package pre-work briefings for specific jobs. Documentation that supported each of these meetings was also reviewed. The team interviewed maintenance department personnel which included the maintenance department supervisor, shop supervisors, and maintenance scheduling and planning supervisors.

The team found that maintenance supervisors demonstrated a good safety focus and their involvement was apparent in maintenance planning activities. The team determined that emergent work was being properly prioritized, based on safety significance, and that procedures for evaluating the risk of emergent work were established. The team also noted that the licensee had established a maintenance schedule for risk significant equipment which was based on risk insights from the plant's individual plant examination. Interviews with the maintenance supervisors indicated that they were aware of which equipment was risk significant.

The team noted that the licensee had no maintenance personnel scheduled for back shift coverage during normal plant operation. Discussions with supervisory personnel indicated that they were able to cope with emergent work activities and that personnel would be held over or scheduled to work a back shift on a case-by-case basis. The team noted that this lack of back shift coverage left equipment out of service longer than necessary. An example of this observed by the team was the extension by 1 day of maintenance for the motor-driven fire pump.

Interviews with the maintenance supervisors indicated that the maintenance shops had an experienced and stable staff and a very low turnover rate. The experience level ranged from 4 to 25 years with the exception of 3 recent additions to the instrumentation and control shop. Less than 25 percent of all craft personnel in each shop were apprentices and there were very few personnel below the apprentice level.

Supervisory involvement in maintenance activities was evident during the team's tours and observations of maintenance work. For observed maintenance activities, the team found that pre-activity briefings were effective and formalized in procedures. The team observed participation of supervisors in the pre-activity briefings, in pre-job walk-downs, and observing maintenance in progress. The team observed active management involvement in decision making at emergent work meetings and the plan-of-the-day meetings.

The team observed that the maintenance department tracked several data bases to assess performance including monthly performance indicator reports, semi-annual component failure analysis reports, and system engineer system report cards.

The team observed excellent coordination between the maintenance department and other departments, especially with system engineering. Observation of maintenance activities indicated a strong involvement of system engineers in work planning and review.

Based on this inspection, the team recommends normal inspection effort in this area.

4.2 Problem Identification and Resolution

The team conducted an in-office review of both NRC and licensee documents that were relevant to the licensee's problem identification and resolution. Trending of performance data was rigorously applied to identify problems across the spectrum of plant activities. The backlog of maintenance work orders, overdue preventive maintenance items and unresolved control room deficiencies showed an increasing trend. The team preliminarily concluded that problem identification warranted reduced inspection effort, and was unable to reach a preliminary conclusion concerning inspection needs for problem resolution due to the need to further assess the areas of responsiveness to external assessment findings and the setting of priorities for backlogged maintenance items.

4.2.1 Problem Identification

During the onsite inspection, the team reviewed incident reports, condition reports, self-assessments, completed work packages, and system report cards. Also, the team toured the plant to determine if in-plant problems existed that had not been previously identified by the licensee.

The team observed that the licensee processes for documenting problems, using condition reports and maintenance work requests, were good and were being implemented by plant personnel. Minor equipment problems observed by the team had been entered into the licensee's corrective maintenance process.

Interviews with maintenance personnel revealed that no formal self assessment process was established; however, effective use was being made of external review group assessments and the licensee's performance enhancement process to improve the maintenance program. The licensee's updating of their maintenance control procedures was an example where the findings from these self assessments were used to improve the maintenance program.

The team concluded that the problem identification process was very good and that maintenance personnel were using the condition reporting process. External assessments and the performance enhancement process were being effectively utilized to identify problems in the maintenance department.

Based on the inspection, the team recommends reduced inspection effort in this area.

4.2.2 Problem Resolution

During the onsite inspection, the team reviewed incident reports and condition reports, maintenance work requests, performance indicators, and system report cards.

The team found that the open corrective maintenance backlog was decreasing and was within the goal set for that performance area. Review of open maintenance work orders indicated 379 open corrective maintenance items as of November 2, 1995, which was down from 470 in July, 1995 and below the licensee's goal of 400.

The team found that long-standing and repetitive equipment problems were being addressed. The team identified the implementation of a formal relief valve testing program, the replacement of obsolete 4160 volt breakers, and the replacement of frequently failing lockout relays as examples of the equipment challenges being addressed.

The team noted that several programmatic problems had been identified by the licensee through their use of external assessments and the performance enhancement program. The licensee was responsive in addressing these problems. This was evidenced by the recently implemented conduct of maintenance procedures. Interviews with maintenance supervisors indicated that deficiencies in training and certification of workers were receiving

appropriate management attention and were being corrected. The team noted that the problems that still remained to be resolved included human factor improvements to maintenance work documents, changing the maintenance culture to improve procedure adherence and attention to details, and developing an improved troubleshooting process.

Based on this inspection, the team recommends normal inspection effort in this area.

4.3 Equipment Performance/Material Condition

The team conducted an in-office review of NRC documents relevant to the material condition of the plant. In addition, the team reviewed licensee documents such as system report cards and component failure analysis reports, to determine equipment performance history. Based on this review, the team concluded that the overall plant material condition was very good. The team noted a problem area with pump performance due to repetitive raw water and reactor coolant pump failures. The team also noted a historical weakness in the area of relief valve performance. The team preliminarily concluded that equipment performance/material condition warranted normal inspection effort.

During the onsite inspection, the team made several tours of the plant. These tours encompassed the control room, the turbine building, the diesel generator rooms, the radiological controlled area, the switchgear rooms, the plant intake structure, and other areas of the plant containing major equipment.

The team found that plant material condition was very good. The team noted the absence of system leaks, minimal evidence of equipment corrosion, and effective housekeeping. In most cases, deficient conditions had been identified, tagged, and entered into the maintenance work request system for resolution. The team identified only two minor equipment deficiencies which had not been previously identified by the licensee.

The team reviewed system report cards and performance indicators and interviewed maintenance supervisors and system engineers. As the result of these reviews and interviews, the team determined that the problems with reactor coolant pump oil cooler leaks had been addressed and corrected. The team's review of the relief valve testing and maintenance program indicated that the program was successful in reducing the rate of relief valve failures. Performance indicator reviews showed that significant events and safety system failures were low. Systems such as high pressure safety injection, auxiliary feedwater, and emergency ac power also demonstrated good performance.

Based on this inspection, the team recommends reduced inspection effort in this area.

4.4 Quality of Maintenance Work

The team conducted an in-office review of NRC documents relevant to the quality of maintenance work. Based on this review, the team concluded that, overall, the quality of maintenance work was a strength. The team noted an improving trend in the area of repeat maintenance (rework activities) and

that, while the skill level of the crafts appeared to be high, outside review committees had been critical of maintenance training. The team preliminarily concluded that the quality of maintenance warranted a reduced inspection effort.

While on site, the team observed maintenance activities, reviewed program and maintenance procedures, and interviewed maintenance workers, shop supervisors, planning personnel and supervisors, and the department maintenance supervisor. The maintenance observations included: replacement and troubleshooting of the 4160 volt circuit breaker for motor-driven Fire Pump FP-1A; troubleshooting of the "ON-AUTO" light for SI-2C on Panel AI-30A-S1-1; vibration testing on motor-driven Fire Pump FP-1A; testing and adjustment of Relief Valves VA-287 and AC-165; calibration of auxiliary feedwater system delta pressure Gauges FI-1113 and FI-1114; and, removal and disassembly of feedwater heater drain Pump FW-5A. The procedures, work packages and working documentation to support these activities were also reviewed.

While the personnel observed were knowledgeable of their tasks, the team observed work activities where personnel exceeded the scope of a maintenance work document and demonstrated a lack of attention to details. The job "team leaders" and shop supervisors checked on the status of work frequently, and system engineers were noted to have a strong involvement with the work activities. It was also noted that while the maintenance procedures were satisfactory, there were instances where the maintenance work documents were not clear. The following are examples of these concerns:

> The team observed that the scope of Work Document MWO 953511, written to troubleshoot the "ON-AUTO" light for SI-2C on Panel AI-30A-SI-1, was exceeded. The work order only provided instructions to replace the light socket and/or the light socket resistor. When these actions did not resolve the light indication problems, personnel proceeded to burnish the contacts of the applicable relay. This relay contact burnishing was not a part of the detailed work instructions. The team noted that this activity did not result in equipment degradation.
>
> The team observed that Step 4.12.1D in Work Document CWO 95-106, to replace the motor-driven Fire Pump 4160 volt breaker, was missed. The step was performed after the lack of performance was questioned by the team. In addition, during the performance of the vibration testing on Fire Pump FP-1A, the requirement of Procedure EM-PM-MX-1000 in Step 6.1.2 to take the motor's running current prior to taking vibration readings was missed. This reading was taken after the team questioned the absence of this reading during the recording of the vibration readings.

The team reviewed incident reports and corrective action reports that related to events regarding foreign material exclusion controls. In addition, the team reviewed the licensee's foreign material exclusion control procedure. Over the past 2 years, the team noted that two corrective action reports and four incident reports had been written involving foreign material exclusion controls. The team also noted that two corrective action reports and two of the aforementioned incident reports involved documentation or area control and

did not involve introduction of materials into process systems. These findings did not indicate a programmatic breakdown and had been addressed or were being addressed by the licensee. The team considered the licensee's foreign material exclusion program to be effective.

The team reviewed records and interviewed personnel to determine the status of personnel training. The team determined that the licensee's self assessments had identified weaknesses in these areas and that the maintenance supervisors were aware of problems with the training and certification of workers. Interviews with supervisors indicated that personnel task qualifications had been reviewed and that, where appropriate, personnel had been disqualified. The maintenance department had established, and was actively executing, a corrective action plan to address the problems in the area of training and qualification. One maintenance team leader was assigned full time to the training department to work on updating the training program.

To provide human factoring feedback for maintenance work documents, the team noted that the licensee requires completed work documents to be returned to the planning department for final review. This review determined if the work package was successful in performing the work task and if any improvements to the documents were necessary prior to using the same or similar documents in the future. The team noted that these reviews were neither timely nor consistent.

Based on this inspection, the team recommends normal inspection effort in this area.

4.5 Programs and Procedures

The team conducted an in-office review of NRC documents relevant to the licensee's programs and procedures in the area of maintenance. Based on this review, the team concluded that the licensee had well established work control procedures governing maintenance. In addition, the team noted that both corrective and preventive maintenance procedures were technically correct and properly implemented. The resolution of one recent finding identified by the licensee that involved discrepancies between the maintenance work orders and forms required for reconciliation on ASME Section XI repairs, appeared to be actively pursued by the licensee for resolution. The team preliminarily concluded that the programs and procedures for maintenance warranted reduced inspection effort.

During the onsite inspection, the team reviewed maintenance work documents, observed on-going maintenance activities, and conducted personnel interviews. In addition, the team reviewed incident reports relating to procedure adherence and adequacy events and audited the licensee's process of identifying and resolving in-plant problems. The team's review of work documents and observations of on-going work activities identified examples where detailed work instructions were not followed. The team also observed examples where the detailed work instructions in maintenance work documents were inadequate, especially when these documents involved troubleshooting activities. The team's review of the new maintenance control procedures indicated that these procedures were an improvement to the maintenance control

process. The team also noted, however, that these procedures were only recently implemented. The team's review of the preventative maintenance program indicated that this program was effective, had a very low backlog, properly considered risk, and was well controlled.

The work document adherence problems observed by the team included: performing troubleshooting activities for the "ON-AUTO" light for SI-2C on Panel AI-30A-SI-1 in a sequence that was different than that specified in the detailed work instructions of Work Order 953511; the failure of quality control to witness a leak test on Relief Valve VA-287, as required by the detailed work instructions of Work Order 953402; and, not signing for completion of steps in the procedure for the repair of the feedwater heater Drain Pump FW-5A (Work Order 953518), even though the work had been completed and the task turned over to another shop. The team noted that these observations were consistent with the licensee's own findings regarding adherence to maintenance work documents that were documented in seven recent incident reports. While most of these findings appeared to be minor in nature, one of these findings, involving the failure to complete forms required for the reconciliation of ASME Section XI repairs, caused some non-destructive examinations to be missed.

The team also noted that the licensee's in-plant maintenance deficiency reporting program suffered from a lack of procedure adherence. This program required the removal of tags when the deficiency was corrected. The team's audit of 19 deficiency/work request tags found hanging in the field, identified 5 tags that were required by the controlling procedure to be removed because either work was completed or the maintenance work package was voided.

The work document adequacy problems observed by the team included: an inadequate troubleshooting work document for the troubleshooting of the "ON-AUTO" light for SI-2C on Sequencer Panel AI-30A-SI-1; an incorrect quality control hold point in the maintenance work document for testing and adjusting of Relief Valve VA-287; the lack of a step directing the removal of a grease drain line from the motor on feedwater heater Drain Pump FW-5A prior to motor removal (which resulted in a damaged line); and, the need to have to continue to make "pen-and-ink" changes to the work document (Work Order 95-106) for replacing the 4160 volt circuit breaker on Fire Pump FP-1A due to an incorrect step sequence, even though similar work documents with the same steps had been and were being performed on a number of circuit breakers. The team's interviews with personnel supported the team's observations in that personnel stated that maintenance work documents were not always adequate for use in the field. In addition, the team's review of three recent incident reports indicated that these observations were consistent with the licensee's own findings regarding problems identified with the adequacy of maintenance work documents.

Based on this inspection, the team recommends increased inspection effort in this area.

4.6 Conclusions and Recommendations

Overall, the team found that the material condition of the plant was very good. Maintenance supervisors demonstrated good safety focus and were actively involved in evaluating emergent work and establishing priorities for maintenance efforts. Management attention to the maintenance backlog was evidenced by the increased performance in maintenance schedule adherence and the reduction in open corrective maintenance work documents. The team observed a high level of supervisory involvement in maintenance work. Problem identification and resolution by maintenance were very good. While there was evidence that personnel work practices exceeded the scope of the work documents and that there were instances of a lack of attention to detail, the quality of maintenance work was considered to be good. The team noted that maintenance work packages were weak and that processes to correct these weaknesses were not timely or consistent. As a result, the licensee relied heavily on skill of the craft to compensate for these process implementation inadequacies.

The team recommends normal inspection activity effort, in the aggregate, for the maintenance area. The team also recommends that inspection efforts focus on the area of maintenance programs and procedures.

5 PLANT SUPPORT

5.1 Safety Focus

The team conducted an in-office review and assessment of both NRC and licensee documents relevant to the licensee's safety focus in the area of plant support. The team preliminarily concluded that safety focus in plant support warranted reduced inspection effort for security and normal inspection effort for emergency preparedness. The inspection effort appropriate to radiation protection was indeterminate.

5.1.1 Radiological Controls Safety Focus

Based on the in-office review, the team preliminarily concluded that communications between the members of the radiation protection organization and other work groups appeared to be effective. Pre-job briefings presented by radiation protection personnel were generally good. Additional information was needed to assess how management communicated expectations to workers and the level of management involvement in decision making.

On site, the team reviewed the coordination and control of daily work activities and the methods employed by the licensee to ensure that management expectations were understood by the workers. The team determined that representatives from the radiological protection organization reviewed the planned work schedule to ensure that radiological protection staff members were available to support the work. The information concerning the daily work schedule was communicated during morning radiological protection staff meetings and by radiological protection representatives attending the routine work control meetings.

The team found that licensee management did effectively communicate expectations to the workers. Expectations were communicated by periodic meetings with the plant manager, morning briefings for radiological protection technicians, and standing orders. Also, management expectations related to radiological protection topics routinely appeared in the site newsletter. Management expectations were included in employee development plans and appraisal requirements. Interviews with licensee personnel confirmed that the personnel were, generally, knowledgeable of management's expectations.

The team reviewed the log for entries into the radiological controlled area by the radiation protection manager and selected radiation protection supervisors. The team found that a modest number of entries were made by the radiation protection manager because of health problems; however, the radiological protection supervisors made frequent visits to work areas and maintained a good understanding of plant conditions and a high level of visibility.

Licensee management maintained a consistent and appropriate staffing level in the radiation protection organization. Turnover during the last year had been low. Dependence on contractors during nonoutage times was noted to be low.

Based on this inspection, the team recommends normal inspection effort for this area.

5.1.2 Security Safety Focus

Based on the in-office review, the team preliminarily concluded that a strength in this area was senior management support. Additionally, it was noted that the security management staff had extensive experience.

On site, the team reviewed the licensee's physical security program. Evaluations and determinations were based primarily on observations of activities, the review of records, and interviews with licensee personnel. Elements of the security program that were reviewed included security training and qualifications, protected area detection aids, and security lighting.

Management support for security was evident through the continued improvements in the program. These improvements included the installation of new metal detectors at the primary access point, and the installation of an infrared sensor protection module on the five explosive detectors. Additionally, the licensee had recently acquired a training and testing system for X-ray machine operators. Security management observed security operations during backshifts and conducted interviews with members of the security organization to determine morale, job knowledge, and problems. The team determined during interviews with security union stewards and security officers that security management maintained open and effective communication.

The team's review of the licensee's security event reports and the security event logs from January 1 through September 30, 1995, determined that the licensee had very good records and a very good reporting program. Security incident reports were excellent - - the reports were accurate, neat, and contained sufficient detail for the determination of root cause, reportability, and corrective action.

Based on this inspection, the team recommends reduced inspection effort in this area.

5.1.3 Emergency Preparedness Safety Focus

Based on the in-office review, the team preliminarily concluded that the licensee had a good safety focus, as was evidenced by their activation of the emergency plan following two reactor trips. Since inspection activities in this area had yet to be completed, emergency preparedness safety focus was not additionally evaluated during the onsite inspection. The team recommends normal inspection effort.

5.2 Problem Identification and Resolution

The team conducted an in-office review and assessment of both NRC and licensee documents relevant to the licensee's problem identification and resolution in the area of plant support. The team preliminarily concluded that overall problem identification and resolution warranted normal inspection effort for security and emergency preparedness. The inspection effort for radiation protection was indeterminate.

5.2.1 Radiological Controls Problem Identification and Resolution

Based on the in-office review, the team preliminarily concluded that audits were a strength, but that additional team assessment was required to evaluate the radiation protection organization's effectiveness in the use of corrective action documents and responsiveness to problems identified through audits and assessments.

On site, the team reviewed radiological occurrence reports, incident reports, and condition reports. It was noted that root-cause analyses were consistently performed when required by procedural guidance and that individuals performing root-cause analyses were properly trained. A formal self assessment identified that, on occasion, the corrective actions taken did not address the root causes.

Licensee representatives acknowledged that trending of radiological occurrence report results was a weak area of the program. Due to the implementation of a new condition reporting system, the team reviewed condition reports initiated by and assigned to the radiological protection organization and determined that the program was properly implemented.

Based on this inspection, the team recommends reduced inspection effort for this area.

5.2.2 Security Problem Identification and Resolution

Based on the in-office review of both NRC and licensee documents, the team preliminarily concluded that strengths in this area included audits of the security and contingency plans, and a security department self-assessment and surveillance program. Weaknesses in this area included the resolution of continued concerns involving the searching of personnel entering the protected area, and a licensee-identified concern where the fitness-for-duty drug testing program could be compromised.

On site, the team reviewed the licensee's physical security program. Evaluations and determinations were based primarily on observations of activities, review of audits and records, and interviews with licensee personnel. Security program elements that were reviewed included security program audits and protected area access control.

Additionally, in conducting a limited review of the licensee's fitness-for-duty program, the team determined that previous weaknesses involving the searching of personnel entering the protected area, and the concern involving use of 'blind' samples in the fitness-for-duty program had been resolved.

The team reviewed audits of the overall security program. These audits, completed by the quality assurance department, were excellent and comprehensive, and included appropriate followup for identified problems. Additionally, the team determined that the security department had conducted comprehensive internal assessments and surveillances of the overall security program. The surveillances were timely, meaningful and included appropriate followup for identified problems.

The team reviewed the safety audit and review committee audit report of the site security plan and contingency plan. The team verified that the audit team personnel had sufficient independence of both security program management and personnel who had direct responsibility for implementation of the security program. Based on this audit review, the team concluded that oversight of the security program was effective, performance oriented, and comprehensive and that the licensee's audits of the security department were a program strength.

The team also determined, through observation, that the licensee properly controlled personnel access to the protected area. The protected area access control equipment was found to be functional and well maintained. Generic vulnerabilities in x-ray, metal detection, and explosive detection equipment had been addressed with solutions that ensured the equipment could not be bypassed or defeated by a knowledgeable person.

Based on this inspection, the team recommends reduced inspection effort for this area.

5.2.3 Emergency Preparedness Problem Identification and Resolution

Based on the in-office review of both NRC and licensee documents, the team preliminarily concluded that the licensee had been effective in identifying several problems in the emergency planning functional area.

During the onsite phase, the team examined the training organization's response to the June 1995 safety audit and review committee review of emergency preparedness. The team found that the training manager had considered the review as informal and, therefore, no structured response had been planned. The manager for emergency planning acknowledged that an action plan should be developed to address the June 1995 review. A draft plan had been prepared in August but had not been finalized. The team concluded that the emergency planning organization had been untimely in developing a comprehensive plan to address the findings of the June 1995 review.

The team recommends normal inspection effort in this area.

5.3 Quality of Plant Support

The team conducted an in-office review and assessment of both NRC and licensee documents relevant to the quality of plant support activities. The team preliminarily concluded that the overall quality of plant support warranted normal inspection effort for radiation protection, security, and emergency preparedness.

5.3.1 Quality of Radiological Controls Activities

Based on the in-office review, the team preliminarily concluded that the licensee had a good performance level in radiation protection; however, there was evidence of occasional poor work practices by radiation workers and contract radiation protection technicians. The content of pre-job briefings and the job coverage provided by radiation protection personnel were noted to be generally good. Excellent performance had been achieved in the control of radioactive materials and contamination. A low number of personnel contaminations had occurred. The radiation protection personnel maintained good control of the work areas.

On site, no work requiring a formal ALARA pre-job briefing was performed during the inspection; however the team attended a pre-job briefing conducted prior to performing a functional test of the post accident sampling system. The meeting was attended by representatives from the operations, systems engineering, radiological protection, and chemistry organizations. Members of the mechanical maintenance shop were not in attendance and had to be briefed separately. The purpose of the meeting was to ensure that all workers understood their work assignments. The team noted that there was a good exchange of information and that workers felt free to ask questions and express opinions. The team also noted that radiological working conditions and previously encountered problems and lessons-learned were discussed.

One of the radiological protection activities selected by the team to evaluate was the radiation survey program. The team accompanied a radiological protection technician to observe the conduct of routine radiation surveys. The team noted that the technician was thorough in the performance of the surveys and used good radiological protection practices. The team selected areas at random and reviewed the survey records. The surveys were performed at the scheduled times and records were complete and easily retrieved. The team also observed survey practices associated with removal of items from the radiological controlled area and identified no problems.

Survey records indicated that approximately 9.5 percent (approximately 6500 square feet) of the radiological controlled area was contaminated. The team compared this contaminated area with that of other pressurized water reactor sites and noted that contaminated areas ranged from approximately 1000 square feet per unit to 6500 square feet per unit. The team concluded that, while the amount of contaminated area in the licensee's facility was at the upper end of this range, it did not represent a safety problem. Radiological protection organization had evaluated this issue and determined that they could not justify, in view of the ALARA concept, expending additional radiation dose to reduce this contaminated area.

The team noted many hot spots in the radiological controlled area, particularly in the safety injection pump rooms. Radiological protection representatives stated that the hot spots were a result of fuel leakage combined with pump operations. Radiological protection personnel determined that the hot spots could not be adequately flushed during operation, and they planned to address the situation during the next refueling outage. The team reviewed a licensee evaluation, performed in 1994, and determined that the hot spots were responsible for approximately 400 millirems per month extra radiation dose. According to a licensee study, the dose rates in the auxiliary building have approximately doubled since that time. Regardless of the relatively recent appearance of hot spots, the team noted that the total radiation dose over the previous 5 years was well below the national average. The cumulative radiation dose, at 138 person-rems for 1995, was relatively low for an outage year.

Based on this inspection, the team recommends reduced inspection effort for this area.

5.3.2 Quality of Security Activities

Based on the in-office review, the team preliminarily concluded that strengths in this area included excellent assessment aids (closed circuit television cameras) and an excellent security radio communication system. A weakness in this area was the manner by which plant employees accessed vital areas.

On site, the team reviewed the licensee's physical security program. Evaluations and determinations were based primarily on observations of activities, review of records, and interviews with licensee personnel.

Elements of the security program that were reviewed included the testing and maintenance of security equipment and systems, and compensatory security measures. Observations and records reviews indicated that the weakness involving the manner by which plant employees access vital areas had been resolved.

The team also determined that the maintenance department provided excellent support to security systems and equipment, and that repairs to security equipment were completed in a timely manner. Security supervisors stated that it was very rare for a security system work order to exceed 1-day before being completed and the system tested and returned to operation. The team reviewed testing and maintenance records and verified that the records required in the security plan were on file, well documented, and readily available for review. The timeliness of maintenance response to equipment problems and the excellent preventive maintenance program minimized the need for compensatory security measures.

Based on this inspection, the team recommends reduced inspection effort in this area.

5.3.3 Quality of Emergency Preparedness

Based on the in-office review, the team concluded that the licensee had conducted appropriate assessment, classification, and activation of the emergency plan activities during actual events. Since inspection activities in this area remained to be completed, the team did not additionally evaluate the quality of emergency preparedness during onsite inspection. The team recommends normal inspection effort.

5.4 Programs and Procedures

The team conducted an in-office review and assessment of NRC documents, such as inspection reports and licensee event reports, relevant to the licensee's programs and procedures in the area of plant support. The team preliminarily concluded that overall programs and procedures warranted reduced inspection effort for radiation protection and normal inspection effort for security and emergency preparedness.

5.4.1 Radiological Controls Programs and Procedures

Based on the in-office review, the team concluded that excellent external exposure controls were being implemented. All the elements of a superior internal exposure control program were in place and the program was effective. The team preliminarily concluded that radiological protection programs and procedures warranted reduced inspection effort.

On site, the team conducted plant tours and observed that radiological posting was appropriate and high radiation areas were controlled as required. Housekeeping within the radiological controlled area was generally good and radioactive materials and waste were stored properly.

The team reviewed training records and noted that topics discussed during radiological protection technician continuing training included recent industry events, notices of violation, lessons-learned, and management expectations. The team attended a portion of the radiological protection technician continuing training and confirmed that these topics were discussed. A high percentage (approximately 86 percent) of the radiological protection technicians had been tested and registered by the National Registry of Radiation Protection Technologists. The staff included one certified health physicist and two other individuals pursuing certification.

The team reviewed selected radiological protection procedures and determined that they provided appropriate guidance.

Based on this inspection, the team recommends reduced inspection effort in this area.

5.4.2 Security Programs and Procedures

Based on the in-office review, the team concluded that a strength in this area was a continued strong security program. A weakness in this area was the timeliness and thoroughness of changes to security plans.

On site, the team reviewed the licensee's physical security program. Evaluations and determinations were based primarily on observations of activities, review of records, and interviews with licensee personnel. Elements of the security program that were reviewed included security program plans and security procedures.

The team found an inconsistency between the security plan and procedures. Paragraph 2.6.2 of Procedure SECOP-05 required one armed and one unarmed nuclear officer be physically present when vehicles exit the protected area via the auxiliary vehicle gate. However, section 7.7.1.A of the security plan required that two armed nuclear officers be present when vehicles exit the protected area via the auxiliary vehicle gate. The team determined through a review of security post rotation records and interviews of security supervisors, that due to a limited number of unarmed officers, the licensee had not implemented this portion of their security procedure, but had consistently complied with the requirements of their security plan. The licensee stated their intention to correct this procedure.

The team observed that this "inconsistency" was the third instance in which the security plan had been inconsistent with other regulatory documents, or with ongoing security practices.

The team determined that the weakness involving the timeliness and thoroughness of changes to security plans had been resolved as follows:

- (Closed) Violation 285/9503-01: Changes to Physical Security Plan

During a previous security inspection, it was determined that the licensee had failed to report to the Commission a description of a change to the physical security plan within 2 months after the change was made, in violation of

10 CFR 50.54(p)(2). The change, implemented prior to 1989, involved the reduction of the observation of the north wall of the materials warehouse during foot patrols of the protected area boundary from once every 2 hours to once every 8 hours.

In their April 11, 1995, response to this violation, the licensee stated that during an earlier security plan revision, it was an oversight to not change the observation frequency of from once every 2 hours to once every 8 hours. Adequate justification for an earlier security plan change could have been based on the warehouse wall construction.

During this inspection, the team reviewed Revision 9 to the licensee's security plan. This revision reduced the frequency of observation for this warehouse wall from once every 2 hours to once every 8 hours.

- (Closed) Inspection Followup Item 285/9503-02: Inconsistency Between the Security Plan and Regulatory Requirements

During a previous security inspection, the inspector noted that a portion of paragraph 10.2 of the licensee's approved physical security plan was inconsistent with regulatory requirements. This paragraph incorrectly required, in part, that the licensee conduct an audit of active contractor or vendor access authorization programs, and fitness-for-duty programs once every 24 months. Regulatory requirements of 10 CFR 73.56 and 10 CFR 26.80, require that these program audits be conducted every 12 months. The inspector verified that the licensee had completed all required audits within the previous 12 months.

During this inspection, the team reviewed Revision 9 to the licensee's security plan. This revision to the plan revised the frequency of these audits to once every 12 months.

Based on this inspection, the team recommends normal inspection effort in this area with an inspection focus on the consistency between the security plan and other related procedures.

5.4.3 Emergency Preparedness Programs and Procedures

Based on the in-office review, the team preliminarily concluded that emergency preparedness programs and procedures warranted normal inspection effort. The team did not additionally evaluate the emergency preparedness programs and procedures during the onsite inspection. The team recommends normal inspection effort.

5.5 Conclusions and Recommendations

In radiological protection, the team found that the radiological protection representatives were aware of planned work and had sufficient time to review proposed work packages to implement radiation dose saving techniques. Management oversight was good, as indicated by the radiological protection supervisors, the radiological status and housekeeping of the facility, and the correct performance of radiological protection activities. Radiological

occurrence reports and incident reports were used appropriately to identify problems. Radiological protection activities such as the radiation survey program, radiological posting, and the control of high radiation areas were conducted properly. Hot spots brought about by fuel problems contributed significantly to the total radiation dose received by workers, but the licensee's ALARA program results were very good when measured against industry-wide standards.

In security, the team identified program strengths in the areas of security training and qualifications, maintenance support to security equipment and systems, security program audits, and protected area detection aids. The team identified another example of an inconsistency between the security plan and site procedures.

In emergency preparedness, the team concluded that the limited information available for the in-office review did not raise any concerns regarding emergency preparedness capability or performance. However, the core inspection program had not yet been performed. Further, the team determined that the core inspection program as applied to past assessment periods had adequately evaluated performance in this area. Final assessment of this area as it relates to inspection efforts, will be determined following completion of the core inspection program activities.

Based on this inspection, the team recommends reduced inspection effort, in the aggregate, for the plant support area.

ATTACHMENT 1

PERSONS CONTACTED AND EXIT MEETING

1 PERSONS CONTACTED

1.1 Licensee Personnel

R. Andrews, Division Manager, Nuclear Services
B. Blome, Supervisor, Corporate Quality Assurance
J. Chase, Manager, Fort Calhoun Station
O. Clayton, Manager, Emergency Planning
R. Conner, Assistant Plant Manager
G. Cook, Supervisor, Station Licensing
H. Faulhaber, Supervisor, Maintenance
S. Gambhir, Division Manager, Production Engineering
W. Gates, Vice President, Nuclear
S. Gebers, Supervisor, Radiation Health and Engineering
J. Herman, Manager, Outage Management
R. Luikens, Operations Engineer
T. Patterson, Division Manager, Nuclear Operations
F. Peterson, President and Chief Executive Officer
H. Sefick, Manager, Security Services
D. Trausch, Manager, Licensing and Industry Affairs
G. Williams, Manager, Media Relations

1.2 NRC Personnel

K. Brockman, Deputy Director, Division of Reactor Safety
J. Callan, Regional Administrator
E. Collins, Senior Reactor Analyst, Division of Reactor Safety
V. Gaddy, Resident Inspector, Fort Calhoun Station
J. Pellet, Acting Branch Chief, Division of Reactor Projects
T. Stetka, Senior Reactor Inspector, Division of Reactor Safety
W. Walker, Senior Resident Inspector, Fort Calhoun Station

The above personnel attended the exit meeting. In addition to these personnel, the team contacted other personnel during this inspection period.

2 EXIT MEETING

An exit meeting was conducted on November 27, 1995 by the integrated performance assessment process inspection team leader. During this meeting, the team reviewed the scope and findings of the report. The licensee did not express a position on the inspection findings documented in this report. The licensee did not identify as proprietary any information provided to, or reviewed by, the team.