
U. S. NUCLEAR REGULATORY COMMISSION
REGION II

SYSTEMATIC ASSESSMENT OF
LICENSEE PERFORMANCE
BOARD REPORT

DUKE POWER COMPANY
OCONEE NUCLEAR STATION UNITS 1, 2, and 3
DOCKET NUMBERS 50-269, 50-270 and 50-287

MCGUIRE NUCLEAR STATION UNITS 1 and 2
DOCKET NUMBERS 50-369 and 50-370

CATAWBA NUCLEAR STATION UNITS 1 and 2
DOCKET NUMBERS 50-413 and 50-414

MAY 1, 1980 THROUGH MAY 30, 1982 (OCONEE and MCGUIRE 1)

SEPTEMBER 1, 1980 THROUGH MAY 30, 1982 (CATAWBA and MCGUIRE 2)

INSPECTION
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50-269,287/82-34, 50-270/82-17, 50-369/82-30
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I. INTRODUCTION

A formal licensee performance assessment program has been implemented in accordance with the commitments of Task I.B.2 of NUREG-0660, Volume 1, "NRC Action Plan Developed as a Result of the TMI-2 Accident". This program, the Systematic Assessment of Licensee Performance (SALP), is applicable to each operator of a power reactor or holder of a construction permit (hereinafter referred to as licensee). The SALP program is an integrated NRC staff effort to collect available observations of licensee performance on a periodic basis and evaluate performance based on these observations. Positive and negative attributes of licensee performance are considered with emphasis placed on understanding the reasons for a licensee's performance in important functional areas, and sharing this understanding with the licensee. The SALP process is oriented toward furthering NRC's understanding of the manner in which: (1) the licensee directs, guides, and provides resources for assuring plant safety; and (2) such resources are used and applied. The integrated SALP assessment is intended to be sufficiently diagnostic to provide meaningful guidance to the licensee. The SALP program supplements the normal regulatory processes used to ensure compliance with NRC rules and regulations.

II. CRITERIA

Licensee performance is assessed in certain functional areas depending on whether the facility has been in the construction, preoperational, or operating phase during the SALP review period. These functional areas encompass a wide spectrum of regulatory programs and represent significant nuclear safety and environmental activities. A functional area may not be assessed because of little or no licensee activity in that area, or lack of meaningful NRC observations.

One or more of the following evaluation criteria were used to assess each functional area:

- . Management involvement in assuring quality
- . Approach to the resolution of technical issues from a safety standpoint
- . Responsiveness to NRC initiatives
- . Enforcement history
- . Reporting and analysis of reportable events
- . Staffing (including management)
- . Training effectiveness and qualification

The SALP Board has categorized functional area performance at one of three performance levels. These levels are defined as follows:

Category 1: 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 such that a high level of performance with respect to operational safety or construction is being achieved.

Category 2: 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 such that satisfactory performance with respect to operational safety or construction is being achieved.

Category 3: 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 such that minimally satisfactory performance with respect to operational safety or construction is being achieved.

The functional area being evaluated may have some attributes that would place the evaluation in Category 1, and others that would place it in either Category 2 or 3. The final rating for each functional area is a composite of the attributes tempered with judgement by NRC management as to the significance of individual items.

III. SUMMARY OF RESULTS

A. Overall Utility Evaluation

Duke Power Company facilities were well supported by corporate personnel during this review period. The licensee has been responsive to NRC concerns and performs thorough evaluations of technical concerns related to safety issues. Technical issues identified by inspectors receive rapid and thorough responses. Issues identified by utility personnel are promptly reported and investigated.

A significant weakness observed at all three facilities was a lack of thorough evaluation or effective corrective action for personnel related errors. This problem is evident in reviews of Licensee Event Reports. Examples at Oconee include failures to follow procedures, inadequate surveillance procedures, and poor communications between different site units. Prior to the startup of McGuire 1, numerous errors relating to poor communications and failure to follow procedures were identified. A review of Catawba noncompliance items revealed problems associated with breakdowns in communications between utility divisions, and management approval of inadequate evaluations.

In 1982, corporate management exhibited a greatly increased presence in dealing with these weaknesses. The McGuire facility has demonstrated dramatic improvement and changes have been instituted at Oconee and Catawba which should improve their corrective action performance. It is anticipated that the improved performance which results from the increased corporate involvement in these areas will be reflected in the next SALP review.

B. Overall Facility Evaluation - Oconee 1, 2 and 3

The Oconee facility appears to be well managed with a staff devoted to nuclear safety. Major strengths were identified in the areas of maintenance, emergency preparedness, refueling, and security and safeguards. An additional licensee strength involved resolution of

technical issues from a safety standpoint. Examples that exhibited the positive aspects of this attribute were the licensee's prompt reporting, investigation, and taking of appropriate corrective action in the removal and replacement of the thermal shield bolts for all three units. The licensee took the initiative in determining the failure mechanism of the bolts and redesigning the fasteners. Another example was the licensee's action to shut down the unit a few weeks prior to a planned outage in order to inspect the auxiliary feedwater headers prompted by information that damage had been identified in similar plants. Strengths were also observed in the analysis of non-reportable events for corrective actions, and the training program in the areas of licensed operators' understanding of pressurized thermal shock phenomena and of a NUREG-0737 item on core damage mitigation. For this latter example both licensed and unlicensed personnel received training commensurate with their responsibilities.

A total of 76 inspections were performed by resident and regional inspectors during the assessment period. During these inspections 60 violations were identified. A weakness was noted in management's attention to procedural control. This was characterized by procedural noncompliances in which violations resulted from the failure to follow procedures and from a lack of communications between different organizational groups (e.g., operations, instrumentation and electrical maintenance, etc.). In some instances, addressed in the functional areas of plant operations and maintenance, corrective actions did not appear to be effective in that similar or repeat violations occurred, due to an apparent lack of management control. For example, although the violation was minor, failure to include a summary of each change made to the facility pursuant to 10CFR50.59 was a repeat violation.

Several strengths and a weakness were observed in the quality assurance (QA) and quality control (QC) departments. Inspections performed of the licensee's 10-year inservice inspection (ISI) program, maintenance welding program, and nondestructive examination (NDE) program, resulted in few and minor violations, indicative of a strong QA organization in that department. However, in the functional area of radiological controls, inspections indicated a weakness in the chemistry and radiochemistry programs. These programs could have been strengthened by a more structured QC program and increased management involvement.

Within the Duke organization, the Nuclear Engineering Services group is responsible for the overall evaluations and submittal of licensing activity and operational event reports to the NRC. During this evaluation period, the NRC noted delays in receipt of reportable events usually in the form of Licensee Event Reports. Additional time taken by the licensee in completing investigations of the events was the apparent cause of delayed reports. Although NRC was informed when any report was to be submitted late, the number of these late reports indicates that increased management attention should be devoted to this area. Final reports, however, were usually concise and accurate, and indicated that the event had been adequately analyzed.

Subsequent to this assessment period, the licensee appeared to have taken steps to improve report processing by forming an onsite safety review group whose primary purpose is to investigate reportable and non-reportable events. This group interfaces with, and provides findings to, the Nuclear Engineering Services group which in turn submits the reports to NRC.

C. Facility Performance - Oconee 1, 2 and 3

Tabulation of ratings for each functional area:

Operations (Units 1, 2 and 3)

1. Plant Operations - Category 2
2. Radiological Controls - Category 2
3. Maintenance - Category 1
4. Surveillance - Category 2
5. Fire Protection - Category 2
6. Emergency Preparedness - Category 1
7. Security and Safeguards - Category 1
8. Refueling - Category 1
9. Licensing Activities - Category 2

D. Overall Facility Evaluation

1. McGuire 1

Management of the McGuire 1 facility was effective and achieved a satisfactory level of operational safety. Major strengths were identified in the important areas of radiological controls, maintenance, surveillance, emergency preparedness, and initial fuel loading and power ascension testing.

A total of 86 site inspections were performed by resident and regional inspectors during the assessment period. During these inspections, 41 violations were identified. Of these, approximately 75 percent were due to failures to follow procedures, inadequate procedures, or procedures not being available. About 17 percent were attributed to personnel errors. Most of the violations occurred during the extended startup period. Management attention was increased to insure that personnel errors were corrected and that the appropriate corrective actions were taken. The increased attention resulted in improved performance as reflected by a decrease in the number of violations identified.

Management's willingness to become involved in matters of nuclear safety was a strength during the reporting period. Management routinely insured the prompt and thorough attention to and resolution of, significant concerns.

A related weakness, through, was that for less significant matters, inadequate corrective actions were tolerated. Additionally, in the earlier part of the assessment period, there

appeared to be poor communications between the operating staff and service groups. These weaknesses have improved considerably in the last six months. The last 19 inspections performed during this assessment period identified only five violations. Licensee staffing and training resources were satisfactory with respect to operational safety.

2. McGuire 2

The McGuire 2 facility was well managed. Adequate resources were devoted to achieve effective construction from a nuclear safety standpoint. Functional areas where major strengths were identified included piping systems and supports, electrical power supply and distribution, instrumentation and control systems, and preoperational testing.

During this assessment period, resident and regional inspectors performed 44 inspections at McGuire in which at least a portion of the effort was directed toward McGuire 2. These inspections identified six violations and two deviations. Half of these inforement actions were related to the fire protection program. The remainder were dispersed in various areas of functional review.

Construction activities were light during this period, due, in part, to the McGuire 1 startup. Management's involvement in the resolution of matters involving nuclear safety was evident in the prompt reporting of events and in the associated corrective actions. The only weakness identified involved inadequate QA involvement with the fire protection program.

E. Facility Performance - McGuire 1 and 2

Tabulation of ratings for each functional area:

Operations (Unit 1) (except as noted)

1. Plant Operations - Category 2
2. Radiological Controls - Category 1
3. Maintenance - Category 1
4. Surveillance - Category 1
5. Fire Protection - Category 2
6. Emergency Preparedness - Category 1
7. Security and Safeguards - Category 2
8. Initial Fuel Loading and Power Ascension Testing - Category 1
9. Licensing Activities (Units 1 and 2) - Category 2

Construction and Preoperational Testing (Unit 2)

1. Soils and Foundations - No Rating Assigned
2. Containment and Other Safety Related Structures - No Rating Assigned

3. Piping Systems and Supports - Category 1
4. Safety Related Components - No Rating Assigned
5. Support Systems - Category 2
6. Electrical Power Supply and Distribution - Category 1
7. Instrumentation and Control Systems - Category 1
8. Licensing Activities - see item 9, above
9. Preoperational Testing - Category 1

F. Overall Facility Evaluation - Catawba 1 and 2

Management attention and involvement were present and were reflected by satisfactory performance with respect to construction activities during this review period. A major strength was identified in the area of the containment and other safety related structures. Fifty-four Unit 1 and fifty-two Unit 2 inspections were performed during the assessment period by the resident and regional inspectors. During these inspections, 35 different violations were identified for the Catawba facility. Of these, 14 involved failure to follow procedures; 14 involved inadequate procedures, drawings or instructions; and the remainder concerned material storage, records, or training. A high percentage of the violations were found in the piping systems and supports area; however, a large portion of the construction work and the inspection effort was expended in this area. Consequently, the number of violations were not disproportionate. Three unresolved items identified during the appraisal period were upgraded to violations subsequent to the end of the appraisal period.

The licensee's major strength appears to be his considerable dedication, at all levels, towards producing quality work. A large percentage of personnel, site and corporate, have worked for the company for many years and on several sites. Therefore, many employees have considerable experience with company goals and share a personal interest in meeting those goals.

In general, the Quality Assurance program has been adequate to identify and correct individual hardware problems. In many instances, though, there appears to have been inadequate management attention devoted to the review of the problem to insure that corrective actions taken were complete and would prevent recurrence. In several instances inadequate evaluations were made in that the generic aspects of the problem were not considered.

A number of problems were identified in the resolution of nonconforming items (NCIs). Some NCIs did not reflect a proper evaluation for reportability to management for review concerning generic aspects or reportability to NRC. Some NCIs did not reflect a proper site review of the problem or the resolution. In most cases, inspection revealed that proper corrective action had been taken although this could not be determined from the documentation. Another weakness identified concerned drawings and instructions transmitted to the field. Necessary information generally was available, but at times was ambiguous or not presented clearly enough to assure proper equipment installation.

Licensee upper management has become very involved in the weaknesses described above. Extensive programs have been launched to correct NCI problems, procedures have been written to clarify the QA program, and training courses have been instituted. Licensee resources are adequate and responses to licensing issues are usually, but not always, timely.

G. Facility Performance - Catawba 1 and 2

Tabulation of ratings for each functional area:

Construction (Units 1 and 2)

1. Soils and Foundation - No Rating Assigned
2. Containment and Other Safety Related Structures - Category 1
3. Piping Systems and Supports - Category 2
4. Safety Related Components - Category 2
5. Support Systems - No Rating Assigned
6. Electrical Power Supply and Distribution - Category 2
7. Instrumentation and Control Systems - No Rating Assigned
8. Licensing Activities - Category 2

H. SALP Board Members (meeting held on September 14, 1982) - Oconee:

- R. C. Lewis, Director, Division of Project and Resident Programs (DPRP) (Chairman), RII
- J. A. Olshinski, Director, Division of Engineering and Technical Programs (DETP), RII
- J. P. Stohr, Director, Division of Emergency Preparedness and Operational Support (DEPOS), RII
- H. C. Dance, Chief, Projects Branch 2, DPRP, RII

I. SALP Board Attendees (meeting held on September 14, 1982):

- J. C. Bryant, Chief, Projects Section 2A, DPRP, RII
- M. V. Sinkule, Chief, Operational Support Section, DEPOS, RII
- W. T. Orders, Resident Inspector, DPRP, RII
- A. J. Ignatonis, Reactor Inspector, DPRP, RII
- T. A. MacArthur, Radiation Specialist, DEPOS, RII
- D. S. Price, Reactor Inspector, DEPOS, RII
- P. C. Wagner, Project Manager, Operating Reactor Branch 4, Division of Licensing (DL), NRR

J. SALP Board Members (meeting held on September 14, 1982) - McGuire, and Catawba:

- R. C. Lewis, Director, DPRP (Chairman), RII
- J. A. Olshinski, Director, DETP, RII
- H. C. Dance, Chief, Projects Branch 2, DPRP, RII
- E. G. Adensam, Chief, Licensing Branch 4, DL, NRR

K. SALP Board Attendees (Meeting held on September 14, 1982).

A. F. Gibson, Chief, Technical Inspection Branch, DETP, RII
 A. R. Herdt, Chief, Engineering and Inspection Branch, DETP, RII
 J. C. Bryant, Chief, Projects Section 2A, DPRP, RII
 M. V. Sinkule, Chief, Operational Support Section, DEPOS, RII
 G. R. Jenkins, Chief, Emergency Preparedness Section, DEPOS, RII
 P. R. Bemis, Resident Inspector, DPRP, RII
 A. J. Ignatonis, Reactor Inspector, DPRP, RII
 T. A. MacArthur, Radiation Specialist, DEPOS, RII
 D. S. Price, Reactor Inspector, DEPOS, RII
 R. A. Birkel, Licensing Project Manager, Licensing Branch 4, DL, NRR
 K. N. Jabour, Licensing Project Manager, Licensing Branch 4, DL, NRR

IV. PERFORMANCE ANALYSIS

A. Oconee Units 1, 2 and 3 (Operations)

Licensee Activities

During the assessment period the major licensee activities at Oconee included: the replacement of all thermal shield bolts in the core support assemblies of the three units, the inspection and/or replacement of high pressure injection makeup line thermal sleeves on the three units, the performance of the 10 year inservice inspections on the three units and the evaluation of external emergency feedwater header design deficiencies on Unit 3.

Inspection Activities

During the assessment period seventy-six inspections were conducted at the Oconee facility consisting of twenty-seven resident inspections and forty-nine regional based inspections. Areas inspected included, but were not limited to, facility operations, radiological controls, surveillance activities, maintenance activities, fire protection, emergency preparedness, security and safeguards, refueling activities, licensing activities and a review of quality assurance activities.

1. Plant Operations

a. Analysis

During this evaluation period, two inspections were performed by regional based inspectors which augmented the routine inspection in this functional area performed by the resident inspection staff.

Twenty-two violations were identified as follows:

- (1) Severity Level IV violation concerning the failure to comply with a limiting condition for operation.

- (2) Severity Level IV violation concerning equipment operability.
- (3) Severity Level IV violation concerning mispositioned control rods.
- (4) Severity Level V violation concerning the failure to abide by an approved procedure.
- (5) Severity Level V violation concerning design change summaries.
- (6) Severity Level V violation concerning the failure to follow approved operating procedures.
- (7) Severity Level V violation concerning the failure to follow approved operating procedures.
- (8) Severity Level V violation concerning the failure to follow approved operating procedures.
- (9) Severity Level V violation concerning a technical specification violation.
- (10) Severity Level V violation concerning an inadequate operating procedure.
- (11) Severity Level V violation concerning the failure to abide by an approved procedure.
- (12) Severity Level V violation concerning the failure to abide by approved operating procedures.
- (13) Severity Level V violation concerning the failure to maintain containment integrity.
- (14) Severity Level V violation concerning the failure to follow an approved operating procedure.
- (15) Severity Level V violation concerning a technical specification violation.
- (16) Severity Level V violation for the failure to review all plant procedures at least every two years.
- (17) Severity Level V violation for the failure to take prompt corrective action on a quality assurance audit finding for inadequate storage.
- (18) Infraction concerning the failure to comply with a limiting condition for operation.

- (19) Infraction concerning the failure to comply with a limiting condition for operation.
- (20) Severity Level VI violation concerning the failure to report.
- (21) Severity Level VI violation for the failure to document procedure reviews.
- (22) Severity Level VI violation for the failure to perform periodic evaluations of training techniques.

As shown above, there are many violations concerning failure to follow procedures or other written instructions. These recurrent violations appear to indicate inadequate licensee management involvement in controlling this situation. Another weakness concerned a lack of licensee management involvement with and control of corrective actions taken to preclude recurrence of similar violations. Prevalence of the minor violations detailed above reflects this weakness.

Generally, facility operations reflect adequate preplanning and assignment of realistic priorities. Facility operating procedures are generally adequate; few examples of inadequate procedures have been identified. Operational decisions usually occur at management levels adequate to ensure appropriate supervisory involvement, as is reflected in the operating history.

Significant operational events which occurred during the assessment period included a number of reactor trips and several steam generator tube leaks. One tube leak of 25 gpm was declared an Unusual Event by the licensee. Operating staff responses to these events, as witnessed or reviewed, were satisfactory and resulted in sufficient control of the events and effective recovery.

Operating staff training, knowledge of the facility, and attitude appear to be good. During the evaluation period, 30 of 39 candidates for operator licenses were successful. In addition, the NRC has reviewed a number of Oconee training programs and has found them, in general, to be very good. An audit of training for pressurized thermal shock showed a good understanding of the subject.

Licensee in-station investigations are routinely performed to address, assess and correct both reportable and non-reportable concerns and events. In general, the resulting licensee event reports (LERs) are good. The LERs usually contain adequate descriptions of the occurrences enabling knowledgeable readers to fully understand the events. In many cases the licensee has provided comprehensive updates of the LERs. At times, however, the LERs have been late and have

not contained adequate information. Additionally, an absence of information regarding repetitive failures was a weakness. Adequacy of LERs was discussed with the licensee in an Enforcement Meeting held on May 21, 1982. Corrective action on technical matters is usually complete and accurate, but is less complete in providing assurance that personal errors have been carefully evaluated.

The licensee has recently established an Oconee Safety Review Group, whose primary responsibility is the investigation of reportable and non-reportable events.

Licensee resolution of technical issues generally shows a clear and thorough understanding of the issues, and is, usually, conservative and viable. Licensee responses to NRC initiatives are normally viable and acceptable with few outstanding regulatory issues attributable to licensee inaction.

b. Conclusion

Category 2

c. Board Comments

None

2. Radiological Controls (includes radiation protection, radioactive waste management, transportation, and effluent control and monitoring)

a. Analysis

During this evaluation period ten inspections were performed by regional based inspectors. Additionally, routine inspections in this area were performed by the resident inspectors. Twelve violations were identified in the area of health physics:

- (1) Severity Level III violation concerning the failure to meet the requirements of the South Carolina Radioactive Material license pertaining to shipment of radioactive material.
- (2) Severity Level IV violation concerning the failure to follow terms and conditions of the certificate of compliance for transport of radioactive material.
- (3) Severity Level IV violation concerning the failure to positively maintain access control to an unlocked high radiation area.

- (4) Severity Level V violation concerning the failure to follow approved health physics procedures and chemistry procedures.
- (5) Severity Level V violation concerning the failure to sample the unit vent for tritium as required by Technical Specifications.
- (6) Severity Level V violation concerning the failure to have an adequate procedure addressing the proper location for sampling prior to release of radioactive liquids.
- (7) Severity Level V violation concerning the failure to take adequate redundant samples of radioactive liquids when effluent control monitors were inoperable.
- (8) Severity Level V violation concerning the failure to perform adequate radiation surveys to adequately post radiation control zones.
- (9) Severity Level V Violation for the failure to fully implement procedures for daily quality control checks.
- (10) Infraction concerning the failure to properly label radioactive equipment outside of a radiation control zone.
- (11) Severity Level VI violation concerning the failure to take appropriate vent samples as required by Technical Specifications.
- (12) Severity Level VI violation concerning the failure to follow approved health physics procedures.

Violations and weaknesses identified above indicate the need for management to focus attention in the areas of compliance with technical specifications, procedures, and regulations.

The Health Physics Appraisal Team visited the facility during the evaluation period and identified weaknesses in the plant's contamination control program, general employee radiation protection training, adherence to health physics procedures, radwaste volume reduction training for plant staff, and implementation of the ALARA Manual. Follow-up inspections have found that the licensee has made significant improvements in these areas and has adopted a number of recommendations of the Health Physics Appraisal Team which have improved the plant's radiation protection program. However, the licensee has not been aggressive in implementing a formal ALARA Program. It has been approximately two years

since this concern was identified. The licensee has indicated full implementation will be initiated by the end of 1982.

It appears that the volume of radwaste has been reduced significantly. This was accomplished by upgrading the training of plant personnel on radwaste volume reduction.

The licensee has been performing an unusual amount of maintenance, modifications, and inspections of all three units during this evaluation period. Also, a ten year inspection of core internals has been performed. Considering the work efforts, the personnel radiation exposure total is comparable to other facilities with similar operational activities. Implementation of a formalized ALARA program could be expected to reduce these exposure levels. The licensee's approach to the resolution of technical issues was normally sound and characterized by viable and thorough approaches.

The licensee's current health physics staffing level, both at the Corporate Office and at the plant site, is adequate and compares favorably to other utilities with a similar size facility. The technical competence of staff personnel is adequate. The plant health physics staff receives sufficient corporate support in dealing with radiological matters, incidents, and problems.

The liquid and gaseous radwaste effluent releases appear to be adequately administratively controlled with the exceptions discussed above. Effluent releases are comparable to other operating facilities.

Two QC and confirmatory measurements inspections were performed with the Region II mobile laboratory during the evaluation period. Violation (9), above, identified the need to upgrade quality control procedures associated with radiological effluent measurements. A followup inspection showed improvement in procedures and correction of weaknesses identified in the earlier inspection.

The need for a more structured QC program and for audits and inspections performed by management was identified and documented early in this evaluation period, but no action has been taken by licensee management.

One environmental inspection was performed during the appraisal period. There were no violations, unresolved items, or deviations. The environmental program is well managed, and no problem areas were identified.

b. Conclusion

Category 2

c. Board Comments

None

3. Maintenance

a. Analysis

During the evaluation period, the area of routine facility maintenance was routinely analyzed by the resident inspection staff.

Four violations were identified as follows:

- (1) Severity Level V violation concerning the failure to follow an approved maintenance procedure.
- (2) Severity Level V violation concerning equipment operability and containment integrity.
- (3) Severity Level V violation concerning the failure to include a summary of each change made to the facility pursuant to 10CFR50.59 in the annual report.
- (4) Infraction concerning the failure to perform a 10CFR50.59 safety evaluation of safety-related equipment prior to installing lead shielding.

No major violations were identified in the maintenance area nor did minor violations recur or indicate programmatic inadequacy.

Analysis of the facility maintenance program reveals that, in terms of programmatic strengths, maintenance activities generally exhibit evidence of adequate pre-planning and assignment of realistic priorities. Maintenance procedures are generally adequate, with few examples of deficient procedures identified during the period. Maintenance related decisions usually transpire at management levels adequate to ensure appropriate supervisory involvement. Management reviews of maintenance activities are usually punctual, thorough, and valid.

Reviews of maintenance records indicate that such records are readily attainable, generally complete, and adequately maintained. Maintenance procedures or policies are rarely violated, as is shown by the number of violations issued during the evaluation period.

Licensee in-station investigations are routinely performed to address, assess, and correct both reportable and non-reportable maintenance concerns. Licensee resolution of maintenance related technical issues generally shows a clear and thorough understanding of the issues and is, usually, conservative and viable. Licensee responses to maintenance related NRC initiatives are typically viable and acceptable, with few outstanding issues attributable to licensee inaction.

The maintenance training and qualification program appears to contribute to an adequate perception of work, and adherence to procedures.

b. Conclusion

Category 1

c. Board Comments

A decrease in inspection activity is being considered.

4. Surveillance (includes inservice testing)

a. Analysis

Operational Surveillance

During the evaluation period routine inspection was performed by the resident inspection staff. In the area of operational plant surveillance, six violations were identified as follows:

- (1) Severity Level III violation concerning breach of containment integrity.
- (2) Severity Level V violation concerning the failure to follow an approved surveillance test procedure.
- (3) Severity Level V violation concerning the failure to perform a required surveillance test.
- (4) Infraction regarding the inadequate approval of a procedure change.
- (5) Infraction concerning the failure to follow an approved surveillance procedure.
- (6) Infraction concerning an inadequate surveillance procedure.

Major violations in the area of surveillance are rare, however one surveillance related issue was the object of

escalated enforcement proceedings including the proposed imposition of a civil penalty. This issue involved the failure to replace a test tee cap following surveillance testing resulting in a breach of containment integrity.

Minor violations are more prevalent. Enforcement history reveals that surveillance procedures or policies are occasionally violated, as was the case with operating procedures.

Surveillance related activities generally reflect adequate pre-planning and assignment of realistic priorities. Facility surveillance procedures are, usually, adequate with few examples of deficient procedures having been identified during the period. One apparent programmatic weakness identified during the evaluation period, and which remains under evaluation, concerns the implementation of technical specifications as surveillance procedures. The licensee is conducting a comprehensive audit of this area to determine needed corrective actions.

Surveillance related decisions usually transpire at management levels adequate to ensure appropriate supervisory involvement. Review of surveillance activities and evaluations are, in the main, punctual, thorough, and valid. Review of surveillance records reveals that such records are readily available, are complete, and are adequately maintained.

Licensee in-station investigations are routinely performed to address, assess, and correct non-reportable surveillance concerns.

Licensee resolution of surveillance related technical issues generally shows a clear and thorough understanding of the issues and is, usually, conservative and viable. Licensee responses to surveillance related NRC initiatives are normally viable and acceptable, with few outstanding issues attributable to licensee inaction.

Inservice Inspection Program

In the area of ISI, four violations were identified as follows:

- (7) Severity Level V violation concerning the failure to follow approved NDE procedures.
- (8) Severity Level V violation concerning the failure to maintain required cleanliness levels inside containment.

- (9) Severity Level V violation concerning the failure to control welding electrodes and cleanliness around welding areas.
- (10) Severity Level VI violation concerning the failure to complete weld documentation records.

The licensee has a strong ISI organization and program as evidenced by the lack of substantive violations or programmatic deficiencies. The qualifications and attitudes of personnel at the management level, as well as supervisory and field positions, are evaluated as above average. They appear to be conscientious and willing to do whatever is necessary to do the job right in order to maintain a safe plant. Questions involving ISI, maintenance welding, and NDE have been handled in a thorough and timely manner.

b. Conclusion

Category 2

c. Board Comments

None

5. Fire Protection

a. Analysis

During this assessment period, two inspections in the area of fire protection were performed by regional based inspectors. Additional inspections were periodically performed by the resident inspectors. One violation was identified:

Severity Level V violation for the unauthorized storage of a large quantity of combustible charcoal filter units in the Unit 1 containment purge exhaust equipment room which presented an unprotected exposure fire hazard to safety related equipment.

The licensee's fire protection modifications provided at Oconee, following the Browns Ferry fire, were also reviewed during this evaluation period. A portion of these modifications were accomplished to a design that did not conform to the industry standards as promulgated by the National Fire Protection Association. These discrepancies were identified to the licensee and for the most part remain outstanding due to the lack of a clear commitment or other understanding between the licensee and the NRC as to the installation code requirements for these systems.

Two minor discrepancies in fire protection administrative procedures were identified involving the storage of combustible materials in safety related areas and the control of open flame ignition sources. These discrepancies were corrected by the licensee.

The monthly surveillance inspection of a portion of the fire protection systems was not conducted within the time specified by the Technical Specifications on several occasions during 1980. This problem was identified by the licensee and reported to the NRC by a licensee event report. Management took prompt action to assure that future inspections and tests on the fire protection system would be corrected within the time required by the Technical Specifications. From 1979 until late 1981 the normal test device was removed from the high pressures service water (fire) pumps due to other construction activities. The result was that no approved method of testing the capacity of the fire pumps existed. A test device was to be installed in late 1981 to permit a proper pump capacity test to be conducted on the pumps. A review of the installation and subsequent test data has not been made by the regional staff.

Prior to June 1981, the fire protection systems at the emergency power facility at Keowee Hydro-Plant were not included in the plant's Technical Specifications and thus did not receive the same degree of detail in the surveillance and test program as those systems covered by the Technical Specifications. These systems are now included in the Technical Specifications.

The plant's fire brigade training program was effective in assuring that all brigade members were adequately trained. Site management as a whole was effective in maintaining a high quality fire protection program.

b. Conclusion

Category 2

c. Board Comments

None

6. Emergency Preparedness

a. Analysis

The inspection history over this period consists of an emergency preparedness appraisal, full-scale exercise, and a recent follow-up inspection. No violations were identified. One emergency preparedness deficiency, relating to post accident sampling procedures, was identified during the

appraisal; adequate corrective action was verified during the follow-up inspection. The March 1982, exercise was considered to be good; problems identified by both NRC and the licensee have been or are being corrected.

b. Conclusion

Category 1

c. Board Comments

None

7. Security and Safeguards

a. Analysis

During this evaluation period seven inspections were performed by regional based inspectors. In addition, routine inspection in this area was performed by the resident inspectors. One violation was identified:

Severity Level V violation concerning the failure to conduct a physical search of personnel prior to entry to the protected area.

The violation noted is attributed to personnel error by the security officer who was responsible for conducting physical searches.

The Oconee Nuclear Station security force is adequately staffed and trained, equipped with physical safeguards, and well managed as evidenced by the results of security inspections conducted. In addition to the one violation discussed above, one security concern was noted during the evaluation period. Corrective actions for both items have been completed, and all security inspection items have been closed.

The Oconee Nuclear Station security program is characterized by aggressive leadership, managerial and technical expertise provided by the proprietary security management function, and dedicated and efficient performance by the contract guard force. These factors contribute significantly to the professional performance of the guard force and their maintenance of high standards in security operations. The security force is consistently well managed, highly trained, and effectively utilized as demonstrated by their record during the evaluation period.

b. Conclusion

Category 1

c. Board Comments

None

8. Refueling

a. Analysis

During the evaluation period there were four refueling outages at the Oconee facility. The associated refueling activities were routinely inspected by the resident staff. In the area of refueling operations, no violations were identified.

Refueling related activities reflected adequate pre-planning and the assignment of realistic priorities as evidenced by the punctual completion of routine outages. Refueling procedures were adequate, accomplishing the associated tasks efficiently and safely.

Refueling related decisions typically transpired at management levels adequate to ensure appropriate supervisory involvement, for example the use of a licensed Senior Reactor Operator solely devoted to fuel and core internal movement.

Technical review of refueling activities and evaluations was typically punctual, thorough and valid. Review of refueling records, such as fuel inventories, revealed that such records were readily attainable, complete and were adequately maintained. Licensee resolution of technical issues generally reflects a clear and thorough understanding of the issues, and is usually conservative and viable.

b. Conclusion

Category 1

c. Board Comments

None

9. Licensing

a. Analysis

Reviews of licensing activities during the evaluation period revealed instances in which a high degree of management involvement occurred; these included the response to operating events resolution and some NUREG-0737 items. There have also been instances in which an apparent inadequate degree of management involvement occurred; these were evidenced by events such as license amendment applications being submitted which contained limitations incompatible with

unit operation and providing additional but seemingly conflicting information without explanation. Examples of these instances included license amendment 107, 107, 104, which dealt, in part, with heatup and cooldown curves for Unit 1 and license amendment 104, 104, 101, which dealt, in part, with local leak rate testing.

Duke Power Company continually exhibits a good understanding of technical issues and generally endorses a resolution which is acceptable to NRC. The design and installation of the safe shutdown facility is an example of an aggressive approach to resolve a number of technical issues. Resolutions or proposed resolutions for some issues are, however, delayed for inordinate periods.

The assessment of individual activities evaluated for licensee responsiveness ranged from very good to poor. For almost all of the activities evaluated, the responses were viable and sound but not generally provided in a timely manner. In addition, there are few regulatory issues which are longstanding that are attributable to Duke.

Although the reportable events, usually in the form of LERs, are sent to the Regional Office, NRC has noticed that a large percentage are being delayed to allow completion of Duke's investigation of the event. Final reports are, however, usually concise and accurate, and indicate that the event was adequately analyzed.

The staffing at the Oconee Nuclear Station appears to be adequate with many knowledgeable members on the staff. However, they should devote more attention to the correction of the observed delays in submitting reports mentioned above, and in replies to NRC requested information. A newly formed organizational group which will have responsibility for issuance of LERs may alleviate delays.

The staffing of the facility appears to be adequate, containing many knowledgeable members. However, in view of the tardiness of responses by the licensing staff, there appears to be a need for increased management attention to the expeditious resolution of technical issues.

- b. Conclusion
 - Category 2
- c. Board Comments
 - None

10. Licensee Events

a. Oconee Unit 1

Licensee Event Reports - 60

Part 21 Reports - 1

The more significant problems have been due to two dropped rods, a small amount of unsampled water spilled from the laundry and hot shower tank, and four activity releases with an inoperable effluent monitor (conservative estimates of the activity released were well within regulatory limits).

The following is an NRC evaluation summary of the 60 LERs reported:

- (1) Ten LERs were related to personnel error. The more significant ones involved isolating emergency feed water and misinterpreting technical specification.
- (2) Five LERs were caused by design or installation errors.
- (3) One "external cause" event was caused by lightning striking the Elevated Water Storage Tank.
- (4) Seven were related to procedural errors. One caused an inadvertent activity release and one caused a reactivity anomaly.
- (5) Twenty-eight were related to component failures.

b. Oconee Unit 2

Licensee Events Reports - 50

Part 21 Reports - 1

The more significant facility problems were due to a steam generator tube leak, and high pressure injection line nozzle cracking.

The following is an NRC evaluation summary of the 46 LERs reported.

- (1) Six LERs were related to personnel error. One example involved failing to return valves to original positions after testing.
- (2) Three LERs were related to design or installation deficiencies.

- (3) Thirty-four LERs, or 74 percent, were related to component failures. Of these component failures, six of 15 pump failures were due to oil system malfunctions, and two were the result of bearing problems. Four were related to turbine or motor driven emergency feed water pumps. Two of 13 valve failures were associated with steam leaks on the feedwater regulator valves.

c. Oconee Unit 3

Licensee Event Reports - 36

Part 21 Reports - 1

The more significant LERs were submitted as a result of high pressure injection (HPI) line nozzle thermal cracking.

The following is an NRC evaluation summary of the 36 LERs reported.

- (1) Ten of the LERs reported were due to personnel errors. The more significant ones involved not meeting the frequency at which boron concentration must be sampled and valve misalignment.
- (2) Eighteen of the LERs reported were due to component failures including steam generator tube failures. The instrumentation failures included fire detector spring inoperability and detectors that were "out of calibration."
- (3) Three of the LERs reported were caused by design or installation errors. The more significant was auxiliary feedwater header deformation from thermal-pressure stresses, and HPI line nozzle thermal cracking.
- (4) Three of the LERs reported were due to procedural errors. Of these, one caused steam generator pressure to exceed 550 psig.

11. Investigation and Allegations Reviews

No major investigation or allegation activities occurred during the review period.

12. Enforcement Actions

a. Violations

Sixty

b. Civil Penalties

No civil penalties were issued during the review period. One civil penalty (\$44,000) was proposed on June 25, 1982 involving a failure to follow a surveillance procedure which resulted in a violation of containment integrity.

c. Orders

No orders were issued as a result of enforcement action.

13. Administrative Actions

a. Confirmation of Action Letters

April 1, 1982 - Discussion of licensee actions with regard to breach of containment integrity found on March 23, 1982.

b. Management Conferences Held During Appraisal Period

An enforcement conference was conducted on May 21, 1982 to discuss a Notice of Violation and Proposed Imposition of Civil Penalty for a Severity Level III violation involving the failure to follow a surveillance procedure which resulted in violation of containment integrity.

B. McGuire Unit 1 (except as noted) (Operations)

Licensee Activities

Unit 1 began loading fuel on January 28, 1981 and achieved initial criticality on August 8, 1981. During December 1981, February 1982, and May 1982, the licensee scheduled outages to conduct eddy current testing of the steam generator tubes. The tubes were found to have excessive wear characteristics previously identified in nondomestic reactors. Due to this excessive wear, which appears to be accelerated above 50 percent power, the unit has been limited to 50 percent power with short (720 hr) power runs to a maximum of 75 percent power for the purpose of data collection. The majority of startup physics testing was also completed during the evaluation period.

Inspection Activities

Several inspections of construction phase activities were performed during the early portion of the review period. One severity level V violation, seven infractions and one deviation were identified in these areas.

In the preoperational and operational phases, in addition to the routine inspection program, a management program team inspection was conducted in June 1981; an Emergency Preparedness Team inspection was conducted in March 1982; a Performance Appraisal Team inspection was conducted; and a Health Physics Team inspection was conducted.

1. Plant Operations

a. Analysis

Several events of operational significance occurred during this evaluation period, including initial fuel loading, initial criticality, and a loss of all charging pumps while the plant was operating at 50 percent power. Initial fuel loading commenced on January 28, 1981 and was completed by February 2, 1981. Initial criticality was achieved on August 8, 1981. No significant abnormal events occurred during the conduct of these operations. On February 12, 1982, while restoring the positive displacement charging pump to service following routine maintenance, hydrogen from the pump's suction dampener valve leaked into the suction line of the positive displacement pump and then was transferred to the suction of the two centrifugal charging pumps. Centrifugal charging pumps "A" and "B" were declared inoperable. The licensee immediately recognized the problem and took prompt corrective action in restoring the two centrifugal charging pumps to service.

With regard to power operation, the unit was restricted to a 50 percent power level the majority of time, with short runs at 75 percent power allowed. The restrictions were due to steam generator tube degradation problems experienced by McGuire and other nondomestic reactors equipped with a similar type of steam generator.

During the evaluation period the preoperational testing, startup, and operation of Unit 1 were inspected in detail. During the preoperational phase eight severity Level V or lower violations were identified. Most of these violations as well as a very large number of LERs were attributable to personnel error or procedural deficiency.

During the transition from the preoperational testing to the startup testing phases, licensee personnel quickly improved their performance. Procedural deficiencies were discovered, corrections made, and personnel error reduced. Personnel errors decreased dramatically at about the time of initial fuel loading. Licensee management, through the executive vice president level, attended meetings with plant personnel to discuss the importance to safety of each individual's attention to job and task performance.

Additionally, a Quality Assurance Team inspection was performed by regional inspectors. Subsequent to initial criticality, one violation was identified:

- (1) Severity Level IV violation concerning the returning of vital batteries to operability when they were still inoperable.

This violation was not indicative of a programmatic breakdown.

Two violations were identified during an NRC Quality Assurance team inspection which directly related to the operations phase:

- (2) Severity Level V violation for the failure to review all plant procedures at least every two years.
- (3) Severity Level V violation for the failure to maintain cleanliness and the failure to post requirements for cleanliness levels in designated areas.

Fifty operations related LERs were reported during the review period. Of these, 25 involved equipment malfunction and an additional seven involved diesel generator problems.

During the evaluation period, operational events were reported in a timely manner. The completeness of these reports increased significantly during the evaluation period. Corrective action was timely and effective in most cases. One weakness was identified involving communications between various organizational groups. A lack of communication was noted, for example, between maintenance and operations that resulted in returning inoperable equipment to an operable status. This situation still appears to need improvement in that two recent Licensee Event Reports demonstrated that the corrective action was not thorough, as two additional pieces of equipment were incorrectly returned to an operable status.

Adequate staffing exists in the operating group with positions identified. Authorities and responsibilities are well defined. The training and qualification program for operations and maintenance personnel makes a positive contribution to plant safety and operation.

The corporate technical training center located at the McGuire site provides training for personnel in various organizational disciplines such as operations, maintenance, and technical support. An indepth inspection of the training programs and their implementation was performed in May 1981. Inspection findings revealed no weaknesses and the training programs were judged to be very good.

All station operators are routinely rotated between Units 1 and 2 in anticipation of all operators having dual unit NRC operator licenses. The licensee's operator requalification program meets or exceeds the requirements of Appendix A to 10 CFR 55 and INPO guidelines (11/3/80), and is conducted on a cyclical basis so that all program requirements are completed in a period not to exceed two years.

The licensee has a defined training program for the station staff. With respect to the operator licensing program, 55 reactor operator and senior reactor operator license examinations were given during the period with an overall passing rate of greater than 80 percent. The training program at McGuire is considered to provide a good understanding of work and adherence to procedures.

b. Conclusion

Category 2

c. Board Comments

None

2. Radiological Controls (including radiation protection, radioactive waste management, transportation, and effluent control and monitoring)

a. Analysis

During the evaluation period twelve inspections were conducted. Two of the inspections were conducted during the operational phase. The resident inspector also conducted inspections in this area. Four violations of severity level V or less were identified early in the SALP period.

Although the above violations occurred prior to initial criticality and did not involve radioactive materials, they indicate that a lack of management attention to regulatory requirements existed at that time. Had the violations involved the actual release of radioactive materials, the severity levels would have been higher.

Subsequent to criticality, the type of violations noted above did not recur. This indicates that adequate corrective action had been taken in the area of compliance with regulatory requirements concerning radioactive effluent discharges.

Inspections during the SALP period reviewed the staffing levels in the health physics area and found that the number of health physics personnel who met the qualification requirement of ANSI N18.1-1971 was adequate. This review of qualifications included both supervisors and technicians.

The plant health physics group is split into four functional groups under the station health physicist. This organizational structure has been effective during this period.

The licensee has a corporate health physics group which periodically audits the plant health physics area and is available to provide assistance in evaluations when required.

The corporate health physics group has been responsive to plant requests for assistance.

The licensee was responsive to evaluating and making changes to the facility monitoring system when problem areas were identified by inspectors. For example, the licensee made changes to the exhaust monitor sample lines for the added liquid waste facility and to sample lines for the containment monitor. The changes made included rerouting to shorten the lines, decrease the number of bends, increase the bend radius and increase the size of the tubing for the line.

The health physics inspection during the operational phase found the licensee's external and internal exposure control programs to be adequate. Included in the inspection of the two programs were instrument and TLD calibrations, bioassay requirements and air sampling. However, during the steam generator eddy current testing a weakness was identified in that procedures for major maintenance, where significant radiological problems could develop, were not always reviewed by the station health physicist.

Two preoperational inspections were performed which included reviews of the QC program associated with the chemistry and radiochemistry analytical program. No violations were identified. Licensee performance on simulated radioactive effluent samples was acceptable. Licensee performance during the operational phase has not been evaluated.

The environmental program is well managed and no problem areas were identified. Two inspections, one preoperational and one operational, were performed in this area during the evaluation period. No violations were identified.

Inspections conducted during the SALP period indicate that the health physics program is adequate. Licensee performance on evaluating simulated radioactive effluent sample was acceptable. In addition, the environmental protection program was found to be well managed.

b. Conclusion

Category 1

The plant has not been operational for a sufficient period to complete the basic radiation protection inspection program. Completion of the basic program is required in order to evaluate the adequacy of the entire radiological controls program.

c. Board Comments

The assigned rating was based upon limited operational experience. A review of greater operational scope and depth will be performed for subsequent SALP appraisals.

3. Maintenance

a. Analysis

During the evaluation period one inspection was performed by regional based inspectors. Additionally, numerous inspections in this area were performed by the resident inspectors.

During the preoperational phase of Unit 1, the following enforcement actions were identified:

- (1) Infraction concerning the improper acceptance verification of a preoperational test (main steam safety valve setpoint test) which was performed at a pressure above the pressure given in the test procedure.
- (2) Deficiency concerning the failure to submit a change to the test procedure used for the main steam safety valve setpoint test.
- (3) Severity Level VI violation concerning the use of tape on a stainless steel pipe for which the tape was not specifically authorized for use.

Subsequent to initial criticality, no violations or deviations were identified.

The inspections have revealed consistent evidence of prior planning and assignment of priorities to all work. The licensee uses well stated, controlled, and explicit procedures for the control of activities. The maintenance department is well staffed and demonstrates a clear understanding of issues, regulations, and licensee commitments. The licensee has been very responsive to issues brought up by NRC and the industry.

Maintenance crews are motivated and have good morale. The training and qualification program makes a positive contribution to the understanding of work and elimination of personnel errors. One weakness identified was the finding that several of the initial maintenance crews had not participated in the corporate maintenance training program. All new employees now attend this program and older employees have received an on-the-job training program as well as the experience of going through construction, and preoperational programs.

b. Conclusion

Category 1

c. Board Comments

None

4. Surveillance (includes inservice and preoperational testing)

a. Analysis

During the evaluation period, surveillance activities were inspected in detail by the resident and regional inspectors. Limited inspection activity was performed in the area of inservice inspection. During the preoperational testing phase eight violations of Severity Level V or less were identified in surveillance areas. The majority of these violations and a large number of LER's were attributed to procedural deficiencies and personal errors. Subsequent to the preoperational testing phase no violations were identified and the number of LER's decreased significantly.

Similar to the Operations functional area, the problems identified in the surveillance area were quickly corrected as personnel gained experience in using the procedures and operating the equipment.

Seventy-four LERs identified inadequacies in the area of plant surveillance or operability testing. Of these, 35 were due to component failure and 14 to personnel error.

The licensee has been very responsive to the problems identified and to NRC findings. Training and qualifications of personnel who have been at the plant for a long time have been primarily accomplished through on-the-job training, with supplemental formal training as appropriate. Additionally, new employees attend an extensive formal training program prior to assignment to the site. One weakness identified has been in the area of procedural deficiencies. Formal training of Instrumentation and Control technicians who had not attended the formal training program could have prevented the problems. The licensee is in the process of a through review of surveillance procedures, to simplify them and identify existing problem areas.

b. Conclusion

Category 1

c. Board Comments

None

5. Fire Protection

a. Analysis

During this assessment period four inspections were performed by regional based inspectors in the area of fire protection. Additional inspections were also conducted by the resident inspectors. Three violations and four deviations were identified:

- (1) Infraction concerning the failure to adhere to the licensee's fire prevention welding and cutting procedures.
- (2) Infraction concerning the failure to properly install fire dampers in safety related ventilation systems.
- (3) Severity Level VI violation for the failure to store training records in cabinets meeting the required fire rating.
- (4) Deviation for the failure to design and install automatic sprinkler systems to conform to the industry code.
- (5) Deviation for the failure to comply with the NRC single failure criteria for the reactor building fire suppression systems.
- (6) Deviation for the failure to design and construct walls around floor penetration shafts which conform to industry standards for three hour fire resistance construction.
- (7) Deviation for the failure to provide a three hour rated wall around the diesel generator day tanks and to properly vent the day tanks.

The licensee corrected the violations. The deviations remain outstanding as the licensee has not revised commitments in the McGuire Station Fire Protection Review (FPR) of September 1977 (revised January 1979) to conform to the "as built" plant conditions. A review, prior to fuel load, of other fire protection commitments identified that several items were not provided as required by the FPR (e.g., lack of and incorrect type of fire detectors in several areas). These items were provided prior to fuel load.

During a review, prior to issuance of an operating license, of the administrative controls for the operating plant fire protection/prevention program, it was identified that several procedures had not been provided for the surveillance of

certain fire protection surveillance items as required by the proposed Technical Specifications. These were to be corrected by the licensee, but verification has not yet been made. Adherence to the administrative controls, including fire brigade organization and training, was satisfactory.

Eight LERs were reported which indicated fire protection system inoperability. These were due to detector, fire pump, and barrier problems.

b. Conclusion

Category 2

c. Board Comments

None

6. Emergency Preparedness

a. Analysis

Three preoperational inspections, a preoperational full-scale exercise, and an emergency preparedness appraisal were performed during this review period. No violations or other enforcement items were identified. The December 1980, exercise was considered fully successful. The March 1982, appraisal was a very thorough, indepth review of the overall emergency preparedness program. McGuire was one of only two operating facilities in Region II where no emergency preparedness deficiencies were identified during the appraisal. This may be attributed to strong management attention in this area coupled with competent, professional emergency preparedness coordinators at both the plant and Corporate Office.

b. Conclusion

Category 1

c. Board Comments

None

7. Security and Safeguards

a. Analysis

During this evaluation period, seven inspections were performed by regional based inspectors. In addition, routine inspections in this area were performed by the resident inspectors. Three violations were identified.

- (1) Severity Level IV violation concerning the failure to control access to the protected area.
- (2) Severity Level V violation concerning the failure to provide an escort for a nondesignated vehicle within the protected area.
- (3) Severity Level VI violation concerning the failure to document security incidents in the Security Journal.

The violations noted are attributed to the failure by security personnel to comply with established written procedures, and a weakness in security supervision relative to monitoring personnel performance and documentation of daily activities and reported incidents. Circumstances of the violations reflect inadequate job knowledge and training deficiencies in some instances.

The three violations cited were identified during a joint investigation and inspection initiated as a result of allegations received by Region II. It is noted that no violations of regulatory requirements were identified during the six routine security inspections conducted during the evaluation period. However, six areas of concern relative to security operations were noted.

The licensee's approach to the resolution of operational and functional security issues has been positive, and characterized by an aggressive response and focus of managerial attention. Corrective action has been completed for the three violations, and three of the six security operations concerns which were identified. The licensee has adequate resources, a training program capable of providing required security training, and effective management involvement and control to assure a quality security program at the McGuire Nuclear Plant.

b. Conclusion

Category 2

The violation and contributing factors discussed above detract from an otherwise effective and efficient security program as evidenced by the results of inspections conducted during the evaluation period.

c. Board Comments

None

8. Initial Fuel Loading and Power Ascension Testing

a. Analysis

Inspections were performed by regional inspectors in the areas of witnessing of initial fuel loading and initial criticality, reviewing power escalation tests, and reviewing various plateaus during power ascensions. One violation was identified:

Severity Level IV violation regarding the changing of acceptance criteria without the prior notification and approval of NRC.

The acceptance criteria were delineated in the Final Safety Analysis Report (FSAR) and were a license condition. Duke personnel reviewed the issue and made an incorrect decision regarding their freedom to make this change. Once the matter was discussed, and all parties involved came to a common agreement, a satisfactory resolution was obtained. Management's decision to make the change was influenced by Westinghouse representatives. Usually, licensee decisions involve management at a high level such that this type of error is rare. Reviews are timely and technically sound. Records are complete and available to the inspector upon request. The licensee's approach to the resolution of technical issues appears sound and conservative. Their system for recognizing issues or non-standard performance is excellent.

Every problem that arises is reported internally, and an investigation is conducted to resolve the issue. From these internal reports, Licensee Event Reports are generated for submission to NRC.

Events are generally reported promptly and completely. During fuel loading 48 LERs were reported. Of these, approximately 25 percent were attributed to personnel error, and 30 percent to design, manufacturing, construction or installation problems.

The McGuire facility is amply staffed. Personnel in key positions are responsible and dedicated to doing a good job. They are always cooperative with inspectors. The overall impression of the facility performance in this area is favorable.

b. Conclusion

Category 1

c. Board Comments

None

9. Licensing Activities (Units 1 and 2)

a. Analysis

Management was actively involved in assuring quality. Typical areas where this involvement was evident included responses to NUREG-0737, and the meeting of Appendix R requirements. The licensee's approach to the resolution of technical issues was, routinely, from a high safety standpoint. There was consistent evidence of planning and the assignment of priorities. Decision making appeared to be at a level that ensured management review. Licensee responsiveness varied widely during the review period. Responsiveness in the areas of equipment qualification and control of heavy loads (NUREG-0612) was poor. These actions involved the submittal of voluminous documents and reports, including proprietary information, which was to be provided to a commercial NRC contractor. In other areas the licensee's responsiveness was timely with the proposed resolutions usually accepted with little or no required modification.

The licensee's performance with regard to reportable events has been prompt and complete.

b. Conclusion

Category 2

c. Board Comments

None

10. Licensee Events

a. McGuire Unit 1 LERs - 233

The SALP evaluation revealed that LERs were submitted primarily in the functional area of plant operations, surveillance, and fuel loading. The number of LERs in the latter category can be considered normal as this was the initial fuel load for the unit. The more significant facility problems addressed by LERs have been loss of rod position indication, power operated relief valve (PORV) leakage, and fast cooldown of the primary due to water being pumped into the steam generators. During initial fuel loading one gaseous release occurred due to personnel error. This could have been more significant had the unit been operating. Approximately 21 percent of the events occurred due to personnel error. The more significant of these events

included the inadvertent dumping of the Central Processing Unit memory, source range monitor inoperability (30 seconds) during initial fuel loading, and technician opening of reactor coolant loop 'A' resistance temperature detector manifold inlet valve causing a reactor coolant leak, blocking of the boron injection flow path, safety injection actuation, failure to maintain T-average, and loss of containment integrity prior to fuel load.

Associated events included 62 events related to various pump and valve problems. Among these, two pertained to charging pump inoperability, four to PORV leakage, two to residual heat removal system isolation valve operability, four to accumulator isolation valves, and four to upper head injection nitrogen accumulator isolation valves. Additionally, 60 events pertaining to instrument failures were reported.

The high percentage of personnel errors and design/installation events is probably due to the plant being in the startup mode and the low level of personnel experience. The relatively low percentage of component failures may also be due to the short operating history. The personnel error rate has decreased dramatically since the completion of the startup phase. The overall high number of LERs may be due to the plant being in the startup testing phase of operations as well as the use of standard technical specifications.

b. Unit 1 Part 21 Reports - 2

11. Investigation and Allegations Review

No major investigation or allegations related activities occurred during this review period.

12. Enforcement Actions

a. Violations

41

b. Civil Penalties

None

c. Orders

No orders were issued as a result of enforcement action.

13. Administrative Actions

a. Confirmation of Action Letters

March 25, 1982 - Discussions of prompt corrective actions taken upon the loss of charging pumps on February 12, 1982.

b. Management Conferences Held During Appraisal Period

None

C. McGuire Unit 2 (Construction and Preoperational Testing)

Licensee Activities

During the assessment period the major construction activities on Unit 2 consisted of: Completion of systems for turnover to operations; fire protection system installation; and, various post-TMI modifications such as the Technical Support Center. The construction of the plant is estimated as 95 percent complete and the licensee estimated fuel load date is March 1983.

With regard to preoperational activities during the assessment period, various system functional tests were completed together with the successful completion of the cold hydrostatic test of the reactor coolant system.

Inspection Activities

During the assessment period, construction inspections were performed on Unit 2 in functional areas such as piping systems and supports; instrument and control systems; electrical power supply and distribution; and support systems which included fire protection. At the end of the assessment period approximately 90 percent of the construction inspection activities were completed. Construction inspections planned, and which will be addressed in a subsequent licensee assessment, will be in areas such as safety-related pipe support and restraint systems; review of as-built design; and onsite design activities.

Near the end of the assessment period the licensee was making a transition from the construction phase of the program to the preoperational phase on Unit 2. Accordingly, preoperational inspections have begun and a limited amount of inspections were performed in the preoperational testing and quality assurance program areas.

1. Soils and Foundations

a. Analysis

During this assessment period, no inspections were performed

in the functional areas of soils and foundations. Additionally, no construction deficiency reports were identified by the licensee in this functional area.

b. Conclusion

The lack of inspection activity in this area precludes a meaningful assessment of licensee performance. No rating is assigned.

c. Board Comments

None

2. Containment and Other Safety Related Structures

a. Analysis

During this evaluation period, two inspections were performed by regional based inspectors. Additionally, routine inspection in this area was performed by the resident inspectors. No violation were identified.

b. Conclusion

The lack of inspection activity in this area precludes a meaningful assessment of licensee performance. No rating is assigned.

c. Board Comments

None

3. Piping Systems and Supports (includes welding, non-destructive examinations, and preservice inspection)

a. Analysis

During this review period, seven inspections were performed by regional based inspectors. Additionally, routine inspection in this area was performed by the resident inspectors. Two violations were identified:

- (1) Severity Level V violation concerning inadequate measures for the evaluation of piping stress reanalysis.
- (2) Severity Level V violation regarding inadequate protection of cable trays and piping.

Management appears to be committed to a strong QA organization which is reflected by the two violations identified within the evaluation period. The violations identified do

not represent programmatic breakdowns. In general, licensee management appears to be concerned and involved with nuclear safety. The licensee's resources appear to be adequate and reasonably effective in that satisfactory performance with respect to construction is being achieved.

b. Conclusion

Category 1

c. Board Comments

None

4. Safety Related Components (includes vessel, internals, and pumps)

a. Analysis

During this evaluation period, one inspection was performed by region based inspectors. Additionally, routine inspection in this area was performed by the resident inspectors. No violations were identified.

b. Conclusion

The lack of inspection activity in the area precludes a meaningful evaluation of licensee performance. No rating is assigned.

c. Board Comments

None

5. Support Systems

a. Analysis

During this assessment period, three inspections were performed by regional based inspectors in the area of fire protection. This area was also inspected by the resident inspectors. Three violations and two deviations were identified:

(1) Severity Level V violation for the failure to conform to the licensee's housekeeping procedures.

(2) Infraction concerning the failure to adhere to the licensee's fire prevention welding and cutting procedures.

(3) Infraction concerning the failure to properly install fire dampers in safety related ventilation systems.

- (4) Deviation for the failure to provide a quality assurance program for the fire protection features installed after January 1, 1978.
- (5) Deviation for storage of fuel in the fuel storage building with the associated building fire protection system not operational.

The licensee took prompt action towards correcting items 1 and 2 above. A sufficient NRC review has not been made to verify that the necessary corrective action has been taken regarding item 2, above. Item 4 was identified at the end of the assessment period and resolution of this deviation will not be completed until late 1982.

b. Conclusion

An inadequate number of inspections of the plant's permanent fire protection features have been performed, during this period, for an assessment to be made. However, based on the lack of a quality assurance program applied to a significant portion of the fire protection systems and features, a rating of category 2 has been assigned in the area of fire protection.

c. Board Comments

None

6. Electrical Power Supply and Distribution

a. Analysis

During this assessment period, there were eight onsite inspections by regional based inspectors in the functional areas of electrical power supply and distribution. One violation was identified during the eight inspections:

Severity Level V violation relating to the use of a safety related cable tray as a walkway.

Management involvement is evidenced by: Frequent onsite visits by upper management personnel, corporate audits, and adequate corrective action program and implementing procedures. Inspectors reviewed the licensee's technical resolution of several issues. The issues were fully investigated in a timely manner and the correction specified was conservative.

Inspectors examined the licensee's responses to NRC bulletins, circulars and notices and found that they were reviewed in a timely manner, fully evaluated and the responses were acceptable. During review of 10CFR50.55(e)

items inspectors noted that the items were evaluated promptly, the necessary corrective action identified and that the implementation of the corrective action was timely and adequate. The licensee inspectors (QC) were qualified and conversant with the procedures. The level of staffing was adequate.

b. Conclusion

Category 1

c. Board Comments

None

7. Instrumentation and Control Systems

a. Analysis

During the assessment period, there were five onsite inspections in the functional area of Instrumentation and Control System. There were no violations identified during these inspections.

Management involvement was evidenced by: Frequent onsite visits by upper management personnel, corporate audits, an adequate corrective action program, and implementing procedures. Inspectors reviewed the licensee's technical resolution of several issues. The issues were fully investigated in a timely manner and the correction specified was conservative. Inspectors examined the licensee's responses to NRC bulletins, circulars and notices and found that they were reviewed in a timely manner, fully evaluated and the responses were acceptable. During review of 10CFR50.55(e) items inspectors noted that the items were evaluated promptly, the necessary corrective action identified and that the implementation of the corrective action was timely and adequate. The licensee's inspectors (QC) were qualified and conversant with the procedures. The level of staffing was adequate.

b. Conclusion

Category 1

c. Board Comments

None

8. Licensing Activities

See discussion for Unit 1, section B.9 above.

9. Preoperational Testing

a. Analysis

The licensee completed the construction program and entered into the preoperational testing and operational preparedness phase near the end of this review period. In May 1982, the reactor coolant system cold hydrostatic test was completed. This was the first milestone of the preoperational testing phase of the inspection program.

Prior to performance of the cold hydrostatic test, the resident and region based inspectors performed inspections in this area, which included "walk-downs" of the reactor coolant system and comparison of the as built configuration to the FSAR description, review of functional test procedures for the containment spray system, residual heat removal system, component cooling water system and safety injection system accumulators, review of the completed preoperational test package for the upper head injection system functional test, and review and witnessing of the procedure and test of the reactor coolant system cold hydrostatic test. Quality assurance inspections were performed in the areas of field drawing control; cable installation; documentation, including review of QA procedures, corrective action reports, and nonconforming item reports; materials certification; and licensee audits of electrical areas.

No violations were identified in the above areas.

Inspectors are reviewing the licensee's preoperational testing procedures, and are following closely the progress of the hot functional test activity. The anticipated fuel load date is March 1983.

b. Conclusion

Category 1

The rating was based upon limited inspections, as the preoperational testing program had just begun as this review period was ending. A more complete assessment of the licensee's performance will be addressed in the next assessment period.

c. Board Comments

None

10. Report Data

a. McGuire Unit 2 CDRs - 24

Construction deficiency reports were submitted in a timely manner, generally complete, accurate, and usually with effective correction action.

b. McGuire Unit 2 Part 21 Reports - 2

11. Investigation and Allegations Review

No major investigation or allegation activities occurred during this review period

12. Enforcement Actions

a. Violations

Six

b. Civil Penalties

None

c. Orders

No orders were issued as a result of enforcement action.

13. Administrative Actions

a. Confirmation of Action Letters

None

b. Management Conferences Held During Appraisal Period

None

D. Catawba Units 1 and 2 (Construction)

Licensee Activities

Construction activities at Catawba 1 and 2 continued throughout the review period. Heavy civil construction is essentially completed in the containment buildings. Elements of the operating staff have been onsite throughout the period. In 1982 the licensee performed an extensive review into interfaces relative to seismic design. The review revealed no major problems.

Inspection Activities

Fifty-nine region based and resident inspections were performed at Catawba during the review period. A region based construction team inspection was made in January and February of 1981.

1. Soils and Foundations

a. Analysis

Three onsite inspections were performed by regional based inspectors during this evaluation period. Construction activity in this functional area is completed. Records of work performed are generally complete, well maintained, and available. No violations were identified. No construction deficiency reports were reported by the licensee.

b. Conclusion

The lack of inspection activity in this area precludes a meaningful assessment of licensee performance. No rating is assigned.

c. Board Comments

None

2. Containment and Other Safety Related Structures

a. Analysis

Limited construction activity was performed in this area during the SALP period. Parts of thirteen inspection visits were devoted to this area by regional based inspectors. Additionally, six routine inspections were performed by the resident inspector and one inspection was performed at Duke corporate offices in the area of design controls. Three violations were identified as follows:

- (1) Severity Level V violation concerning a missed inspection of modifications to spent fuel pool gates.
- (2) Infraction concerning the failure to follow nonconformance procedure reporting requirements in identifying cracks in the auxiliary building concrete.
- (3) Severity Level VI violation regarding rebar spacing which was not accomplished in accordance with prescribed drawings.

Management involvement, resolution of technical issues, reporting and analysis of reportable events, staffing and training were adequate for the level of activity observed.

The license was responsive in correcting the minor violations. Design controls met NRC requirements and appeared to be an effective method of controlling design activities.

b. Conclusion

Category 1

c. Board Comments

None

3. Piping Systems and Supports (includes welding, NDE, and preservice inspection)

a. Analysis

This area was among the most active during the review period. Fourteen inspections were performed by regional based inspectors. Additionally, routine inspection in this area was performed by the resident inspector. Twenty-three violations were identified as follows:

- (1) Severity Level IV violation regarding the acceptance of pressurizer relief valves containing defects rejectable by the ASME code.
- (2) Severity Level IV violation regarding a lack of procedures to preclude the alteration of repair weld cavities after the performance of inspection.
- (3) Severity Level V violation concerning misinspection of weld reinforcement.
- (4) Severity Level V violation concerning inadequate controls for welding.
- (5) Severity Level V violation concerning improper ultrasonic preservice examination.
- (6) Severity Level V violation concerning control of surface applied materials on reactor coolant piping.
- (7) Severity Level V violation concerning loss of control of welding filler materials.
- (8) Severity Level V violation regarding the failure to accomplish a proper technical evaluation in that a rejectable lack-of-fusion defect was accepted by licensee personnel.

- (9) Severity Level V violation regarding the failure of a procedure to properly address the cause of three weld defects in that the cause and action to preclude repetition were not identified.
- (10) Severity Level V violation regarding the improper storage of machined flow sections.
- (11) Severity Level V violation regarding the failure to provide procedures to control the clearance between piping systems and components.
- (12) Severity Level V violation regarding inadequate site measures to assure the thorough evaluation and reporting of generic nonconforming items.
- (13) Severity Level V violation regarding four examples of welding deficiencies.
- (14) Severity Level V violation regarding hangers not meeting angular tolerances and one hanger drawing not requiring a certain weld.
- (15) Infraction concerning improper storage of safety related valves.
- (16) Infraction concerning improper storage of flammable fluids in proximity of NSSS equipment.
- (17) Severity Level VI violation regarding pencil marks being placed on stainless steel piping.
- (18) Severity Level VI violation regarding the application of masking tape to stainless steel piping during welding.
- (19) Severity Level VI violation regarding the failure to perform liquid penetrant inspection on a Class B weld repair.
- (20) Severity Level VI violation regarding the failure of nonconforming item reports to contain sufficient clarity, completeness and content.
- (21) Severity Level VI violation regarding the failure to document and report to the appropriate levels of management, the inadequate design of a hanger.
- (22) Deficiency concerning abandoned welding filler materials.
- (23) Deficiency concerning improper documentation of welding procedure qualification data.

The total number of violations concerning welding program implementation, storage, and general piping installation activities is high. No significant hardware violations were identified in these areas during the review period. A significant violation affecting hardware, identified as an unresolved item during the SALP period, was upgraded to a violation after the SALP period. This violation includes accepting a serious rejectable material defect in a class B piping system (defect extended almost through wall). This violation is also discussed in the overall facility evaluation above.

Many concerns were expressed to licensee management by Catawba QC Welding Inspectors in the fall of 1981. The licensee implemented a task force to address these concerns and to properly inform the NRC. Most of the licensee actions recommended by the task force are now complete and NRC has begun the followup inspection. Although no significant hardware deficiencies were identified by the end of the SALP review period, numerous QA procedure violations and cases of improperly handled NCI's were identified. The Duke written welding QA program is exceptionally good. However, the program is not always followed. The task force findings indicate many instances where program details were not adhered to. The task force findings also support the contention that licensee corrective action systems need improvement.

Staffing in this area was adequate. Responsiveness to safety issues was generally excellent as evidenced by the task force review performed regarding the QC welding inspector concerns and the review of design interfaces conducted as a result of the design problems identified at another facility.

b. Conclusion

Category 2

c. Board Comments

None

4. Safety Related Components (includes vessel, internals, and pumps)

a. Analysis

Portions of ten inspections were performed in this area, however, limited construction activity occurred during this review period. Three violations were identified as follows:

- (1) Severity Level V violation concerning inadequate procedures for mechanical equipment installation.

- (2) Severity Level V violation regarding the failure to establish measures to assure the adequate training of personnel relative to NRC evaluation and reporting requirements.
- (3) Severity Level V violation concerning ineffective or improperly performed storage inspections.

b. Conclusion

Category 2

This rating is based upon limited inspection activity.

c. Board Comments

None

5. Support Systems (includes heating, ventilation and air conditioning (HVAC), radwaste, and fire protection)

a. Analysis

During this assessment period limited inspection was performed on the HVAC system. An unresolved item was identified and later escalated to a violation that pertained to a lack of adequate inspection records for HVAC hanger inspections. No inspections were conducted in the areas of fire protection and radwaste. Staffing in the area of support systems was adequate. Responsiveness to safety issues was generally excellent.

b. Conclusion

The lack of inspection activity in this area precludes a meaningful assessment of licensee performance. No rating is assigned.

c. Board Comments

None

6. Electrical Power Supply and Distribution

a. Analysis

A total of ten inspections were made during this evaluation period by regional based inspectors of which eight were onsite inspections performed in the functional areas of electrical equipment and cable installation. Two inspections were conducted at the licensee's corporate offices in the

area of design of electrical equipment and cable installation. During the inspections, six violations were identified as follows:

- (1) Severity Level IV violation regarding the review of nonconforming items for reportability.
- (2) Severity Level V violation regarding instrumentation tray and tray supports mounted on safety related motors without approved drawings.
- (3) Severity Level V violation concerning uncontrolled pages of a Duke specification being in the possession of electrical QC inspectors without being appropriately marked.
- (4) Severity Level VI violation regarding two cables which did not follow the design routing.
- (5) Severity Level VI violation regarding the signing of storage inspection records.
- (6) Severity Level VI violation concerning inadequate instructions regarding electrical power cable spacing.

During routine inspections in the electrical/instrumentation areas, problems with design issued specifications drawings were detected. A review of all specifications and drawings in this area has been initiated. Results of this review were not available as of this writing.

Management involvement is evidenced by frequent onsite visits by upper corporate management personnel, corporate audits, an adequate corrective action program, and implementing procedures. The licensee's technical resolution of an issue concerning Valcor solenoids was reviewed. The matter was fully investigated by the licensee in a timely manner and the corrective action specified was conservative.

The licensee's responses to NRC bulletins, circulars and notices were examined. It was found that the bulletins, circulars, and notices had been reviewed in a timely manner, fully evaluated and that the responses were acceptable. During reviews of 10CFR50.55(e) items, it was noted that the items were evaluated promptly, the necessary corrective action identified, and that the implementation of the corrective action was timely and adequate. The licensee's inspectors (QC) were qualified and completely knowledgeable of the procedures. The level of staffing was adequate.

b. Conclusion

Category 2

c. Board Comments

None

7. Instrumentation and Control Systems

a. Analysis

During the assessment period, there were no onsite inspections by regional based inspectors. The installation of safety-related instrumentation has not reached a point where inspections are required.

b. Conclusion

The lack of inspection in this area precludes a meaningful assessment of licensee performance. No rating is assigned.

c. Board Comments

None

8. Licensing Activities

a. Analysis

Management is involved in assuring quality. There is evidence of planning and assignment of priorities. Decision making seems to be at a level that ensures management review. Performance, in this regard, has been generally consistent for all major licensing activities. The approach to the resolution of technical issues is from a safety standpoint. The licensee's responsiveness for individual licensing actions examined during this assessment period varied considerably. Poor responsiveness was associated with two licensing actions. Overall, licensee responsiveness was satisfactory. Licensing staffing was adequate. The training program has been implemented for a large portion of the licensing staff.

Licensee management has participated in and shown interest in the review of the physical security program. Site visits by NRC staff were well staffed and coordinated by the licensee. The information exchange between corporate personnel, site operations and construction personnel, security personnel, and NRC safeguards reviewers was comprehensive and constructive.

The licensee has presented well planned approaches to technical issues consistent with the intent of the regulatory requirements. Staffing is proceeding smoothly.

- b. Conclusion
 - Category 2
- c. Board Comments
 - None

9. Licensee Events

- a. Construction Deficiency Reports

- Unit 1 - 44
 - Unit 2 - 33

The construction deficiency reports were submitted in a timely manner, generally complete, accurate, and usually with effective corrective actions.

- b. Part 21 Reports

- Unit 1 - 4
 - Unit 2 - 4

10. Investigations and Allegations Review

No major investigation or allegations related activities occurred during the review period.

11. Enforcement Actions

- a. Violations
 - 35
- b. Civil Penalties
 - None
- c. Orders

No orders were issued as a result of enforcement action.

12. Administrative Actions

- a. Confirmation of Action Letters

March 3, 1981 - To confirm licensee commitments relative to construction team inspection findings.

- b. Management Conferences Held During Appraisal Period

One conference was held at the licensee's request during the review period:

February 26, 1981 - To discuss construction team inspection findings and Duke's response.