

DEC 31 1984

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ENCLOSURE 2  
SALP BOARD REPORT

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U. S. NUCLEAR REGULATORY COMMISSION  
REGION II

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SYSTEMATIC ASSESSMENT OF LICENSEE PERFORMANCE

50-369/84-36; 50-370/84-34

DUKE POWER COMPANY  
MCGUIRE NUCLEAR STATION UNITS 1 AND 2

May 1, 1983 through August 31, 1984

## I. INTRODUCTION

The Systematic Assessment of Licensee Performance (SALP) program is an integrated NRC staff effort to collect available observations and data on a periodic basis and to evaluate licensee performance based upon this information. SALP is supplemental to normal regulatory processes used to ensure compliance to NRC rules and regulations. SALP is intended to be sufficiently diagnostic to provide a rational basis for allocating NRC resources and to provide meaningful guidance to the licensee's management to promote quality and safety of plant construction and operation.

A NRC SALP Board, composed of the staff members listed below, met on November 16, 1984, to review the collection of performance observations and data to assess the licensee performance in accordance with the guidance in NRC Manual Chapter 0516, "Systematic Assessment of Licensee Performance." A summary of the guidance and evaluation criteria is provided in Section II of this report.

This report is the SALP Board's assessment of the licensee's safety performance at the McGuire Nuclear Station for the period May 1, 1983 through August 31, 1984.

### SALP Board for Oconee Nuclear Station:

J. A. Olshinski, Director, Division of Reactor Projects (DRP),  
Region II (RII) (Chairman)  
P. R. Bemis, Acting Director, Division of Reactor Safety, RII  
J. P. Stohr, Director, Division of Radiation Safety and Safeguards, RII  
V. L. Brownlee, Chief, Project Branch 2, DRP, RII  
R. M. Bernero, Director, Division of Systems Integration,  
Office of Nuclear Reactor Regulation (NRR)

### Attendees at SALP Board Meeting:

H. C. Dance, Chief, Section 2A, DRP, RII  
W. T. Orders, Senior Resident Inspector, McGuire, DRP, RII  
R. Pierson, Resident Inspector, McGuire, DRP, RII  
A. J. Ignatonis, Project Engineer, Section 2A, DRP, RII  
K. D. Landis, Chief, Technical Support Staff (TSS), DRP, RII  
D. S. Price, Reactor Inspector, TSS, DRP, RII  
T. C. MacArthur, Radiation Specialist, TSS, DRP, RII

## II. CRITERIA

Licensee performance is assessed in selected functional areas, depending upon whether the facility is in a construction, preoperational, or operating phase. Each functional area normally represents areas which are significant to nuclear safety and the environment, and which are normal programmatic areas. Some functional areas may not be assessed because of little or no licensee activities or lack of meaningful observations. Special areas may be added to highlight significant observations.

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

- A. Management involvement and control in assuring quality
- B. Approach to resolution of technical issues from a safety standpoint
- C. Responsiveness to NRC initiatives
- D. Enforcement history
- E. Reporting and analysis of reportable events
- F. Staffing (including management)
- G. Training effectiveness and qualification

However, the SALP Board is not limited to these criteria and others may have been used where appropriate.

Based upon the SALP Board assessment, each functional area evaluated is classified into one of three performance categories. The definition of these performance categories is:

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 so 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 so 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 so that minimally satisfactory performance, with respect to operational safety or construction, is being achieved.

### III. SUMMARY OF RESULTS

#### A. Overall Facility Evaluation - McGuire 1 and 2

The McGuire facility was adequately managed and achieved a satisfactory level of operational safety. Major strengths were identified in the areas of emergency preparedness, refueling, licensing activities, and startup testing. A major weakness was identified in the area of plant operations.

Several major licensee accomplishments were made during this assessment period. Unit 1 underwent the first refueling outage in early Spring of 1984, in which 59 Westinghouse standard fuel assemblies were replaced with newly designed optimized fuel assemblies. For Unit 2, the licensee completed modifications to the preheater sections of Model D3 steam generators, completed startup testing and declared the unit to be in commercial operation on March 1, 1984. (Unit 2 achieved initial criticality on May 8, 1983.)

There was an increase in violations during this assessment period as compared to the previous period. The violations were the result of inattention to Technical Specification requirements, failure to follow and use procedures, and inadequate procedures. A majority of these violations were identified in the functional areas of plant operations, radiological controls, and surveillance.

In plant operations, the operators responded satisfactorily to operational events resulting in effective unit recovery. However, a weakness was observed in procedural compliance. Failure to properly document the removal of equipment such as the containment spray system, and failure to perform proper independent verification on equipment such as the containment spray system recirculation valve and the centrifugal charging pump breaker led to the more significant violations. The frequency of failures to follow procedures has increased during this assessment period in plant operation. A large number of these type of violations were caused by the instrument and electrical technicians in performing surveillance tests. Certain of these instances resulted in reactor trips from power operation.

The maintenance program received adequate planning, assignment of priorities, and management involvement. The procedures were adequate; however, there was one instance where independent verification was not specified and not performed which resulted in the removal of incorrect components.

As noted in past assessment periods, the licensee continued to exhibit strong technical competence in safety review areas and resolution of technical issues. Management involvement was evident in the resolution of issues regarding nuclear safety and the prompt reporting of events

and corrective actions. The licensee kept up with state-of-the-art development. For example, they have performed spent fuel pool rerack modifications and loaded the Unit 1, cycle 2 core with newly designed optimized fuel assemblies.

B. Facility Performance - McGuire 1 and 2

Functional Area	June 1, 1982 - April 30, 1983	May 1, 1983 - August 31, 1984	Trend During Latest SALP Period
Plant Operations	1	3	Same
Radiological Controls	1	2	Same
Maintenance	1	2	Same
Surveillance	2	2	Improved
Fire Protection	2	Not Rated	Not Determined
Emergency Preparedness	1	1	Same
Security and Safeguards	1	2	Same
Refueling	1	1	Same
Quality Assurance Program	2	2	Same
Licensing Activities	1	1	Same
Preoperational Testing (Unit 2)	1	Not Evaluated	Not Evaluated
Startup Testing (Unit 2)	Not Evaluated	1	Same

IV. PERFORMANCE ANALYSIS

A. Plant Operations

1. Analysis

During this assessment period, routine and special inspections of plant operations were performed by the resident and regional inspection staffs.

Facility operations generally reflected adequate preplanning and assignment of priorities. Facility operating procedures were generally adequate. Operational decisions were usually made at management levels adequate to assure appropriate supervisory involvement. The operations staffing appeared to be adequate and the minimum required shift crew composition was met during this assessment period.

Operating staff training, knowledge of the facility, and attitude appeared to be good. Operator licensing examinations were conducted during the evaluation period, including both written simulator and oral examinations. Licensing examinations were given to ten reactor operator candidates and six senior reactor operator candidates; six reactor operator (RO) and four senior reactor operator (SRO) candidates passed their examinations and received licenses. Four of the reactor operator candidates who

failed the initial examination were administered retake examinations; three of the candidates passed and received their license. One of the senior operator candidates who failed the initial examination was administered a retake examination which he passed. He subsequently received a license.

Significant operational events that occurred during this assessment period included Unit 1 loss-of-offsite power transient as a result of multiple 230 kV switchyard breakers opening due to a malfunction in the switchyard computer when the unit was at 100 percent power; a Unit 2 loss of reactor coolant from a rupture of the upper head injection vent line sight glass while the unit was in preparation for startup; and Unit 2 packing ring blow-out in the chemical and volume control system letdown line valve that cross-connects to the residual heat removal system together with a 2-inch pipe break located downstream of that valve while the unit was in cold shutdown. In addition, both units experienced reactor trips from power operation. Twenty-six reactor trips occurred on Unit 1 and eleven reactor trips occurred on Unit 2. The majority of these trips were attributed to personnel error in which a more detailed discussion is provided below and in the surveillance functional area regarding procedure compliance.

The operating staff responses to the above events were adequate and resulted in effective unit recovery. In particular, for the loss-of-offsite power event, the operators displayed cognizance of plant conditions by manually closing the main steam isolation valves following reactor trip in order to prevent excessive cooldown and depressurization of the reactor coolant system when Unit 1 was aligned to Unit 2 supplying auxiliary steam for Unit 2 startup.

A notable weakness was observed in procedural compliance; specifically, failure to follow and properly implement operations and administrative procedures. The frequency of instances of failure to follow procedures increased dramatically as did other violations related to plant operations. Instances of the former include virtually all aspects of failure to follow procedures including failure to use procedures which accounted for the majority of violations in this functional area. Certain of these instances resulted in reactor trips and subsequent unit unavailability; however, a number of them were caused by instrument and electrical technician error rather than operator error. A more detailed discussion of this subject matter is provided in the surveillance functional area. Other instances adversely affected reactor safety by rendering required plant safety systems inoperable such as containment spray systems as evidenced in the first two violations addressed below.



For corrective actions to the violations, licensee upper management held meetings with station personnel stressing the importance for following and using procedures and correcting inadequacies in the procedures.

Another weakness observed during this assessment period was the licensee's failure to properly and fully implement independent verification of operating activities. Independent verification of the correct alignment of safety-related equipment was not always performed as evidenced in the second and third violation shown below. Enforcement conferences were held with the licensee on this subject. For corrective action the licensee committed to implement an upgraded program for independent verification of safety-related systems and components by January 1, 1984. The licensee's Administrative Policy Manual expanded information on the scope of independent verification. Station Directive 4.2.2, "Independent Verification Requirements," was issued on December 6, 1983, and is the parent document governing the implementation of the revised program. Furthermore, the licensee performed a special QA audit of all station independent verification activities. Based on the licensee's work, it appears that the new program should more adequately meet the intent of NUREG 0737, item I.C.6., by revising procedures for verification of correct performance of operating activities. However, during a special inspection of selected TMI items in August 1984, additional weaknesses in the McGuire independent verification program were documented. The licensee will address these items in their response.

During that same inspection, it was observed that certain TMI items were not fully implemented at McGuire, as described in violations j and k below.

The licensee provided adequate event reports during the assessment period. Consistency appeared to be a problem, but tracking of repetitive events was good. Licensee in-station investigations were routinely performed to address, assess, and correct both reportable and non-reportable events. The Licensee Event Reports (LERs), in the main, contained adequate descriptions of the occurrences, enabling knowledgeable readers to fully understand the events. In several cases, the licensee provided comprehensive updates to the LERs. For example, they provided further details and an expanded discussion on loss of residual heat removal trains, and, in another case an evaluation of the licensee's capability to achieve hot shutdown in the event of a fire in the annulus with the sprinkler system isolated. Corrective action on technical matters was usually complete and accurate, showing a clear and thorough understanding of the issues. Licensee responses to NRC initiatives were normally acceptable.

Thirteen violations and one deviation were identified during this evaluation period. The violations can be categorized in three general areas: failure to follow procedures, failure to use procedures, and inadequate procedures.

The identified violations and the deviation were:

- a. Severity Level III violation for failing to execute procedural documentation requirements for the removal from service of equipment which ultimately led to inoperability of both containment spray systems and one diesel generator on one unit.
- b. Severity Level III violation for failure by a second qualified individual to make an appropriate second independent verification for correct positioning of the containment spray recirculation valve upon completion of the monthly surveillance test.
- c. Severity Level III violation for failure to follow procedure during the removal and restoration of the 1-A centrifugal charging pump (CCP) breaker. Independent verification was not performed. Subsequent to CCP breaker restoration, the licensee failed to perform proper daily verification of breaker position. As a result, the 1-A CCP was inoperable for seven days.
- d. Severity Level IV violation for failure to adequately establish, implement, or maintain procedures for plant operations with the following three examples given: (1) failure to follow a procedure for the Unit 2 Solid State Protection System functional test which resulted in a reactor trip; (2) failure to isolate and tag the Unit 1B boric acid transfer pump as required by the Station Directives which resulted in a 30-40 gallon radioactive spill; and (3) failure to abide by Station Directives when incomplete operations surveillance procedures were signed off as complete with no discrepancies noted.
- e. Severity Level IV violation for failure to follow the controlling procedure for unit startup which resulted in a violation of withdrawal limits established to prevent a positive moderator temperature coefficient.
- f. Severity Level IV violation for failure to follow, maintain, and implement approved procedures with the following four examples given: (1) failure to follow a procedural step during the performance of protective system channel 1 functional test which resulted in a unit trip from full power; (2) failure to incorporate new setpoints for pressurizer safety discharge high temperature alarms when they



were changed; (3) improperly declaring the loose parts monitor channel operable in the daily surveillance procedure when in fact it was inoperable; and (4) failure to utilize a procedure while working inside the Unit 1 solid state protection cabinets.

- g. Severity Level IV violation for failure to follow a procedure which requires that during surveillance testing of the Reactor Protection System, administrative control of affected equipment be maintained by placement of red tags. Failure to do so in this case resulted in the loss of decay heat removal capability.
- h. Severity Level IV violation for failure to abide by approved procedures with the following three examples given: (1) failure to follow operating procedure for operation of the chemical and volume control system by not verifying the suction header valve to be open prior to pump start resulting in destruction of the 2-B centrifugal charging pump; (2) failure to abide by Station Directives governing the conduct of operations in that 18 high volume control tank (VCT) pressure and/or high VCT level alarms were received over a 12 minute period immediately preceding the destruction of the 2-B centrifugal charging pump without the operators taking prompt corrective action; and (3) failure to follow surveillance procedures which resulted in an erroneous tripping of the main Train B reactor trip breaker instead of the bypass breaker and a subsequent unit trip from 89% power.
- i. Severity Level IV violation for reporting an event as a 30 day report, rather than a prompt report requiring a written followup within 14 days.
- j. Severity Level IV violation for failure to establish, implement and maintain procedures for NUREG-0737 requirements in such areas as administrative control of access to the control room surveillance area, sign-off of an operating procedure indicating review completion, and administrative control of overtime work for key personnel.
- k. Severity Level V violation for failure to issue an annual management directive designating the individual responsible for control room command functions.
- l. Severity Level V violation for failure of the Nuclear Safety Review Board to review revisions to required procedures.
- m. Severity Level V violation for failure to prepare and submit a special report on inoperability of a loose part detection system channel.

- n. Deviation for failure to maintain shift turnover checklists in the master file for a minimum of six years.

2. Conclusion

Category: 3

Trend: Same

3. Board Recommendations

Licensee management involvement in this area was acceptable, however, weaknesses were evident. Increased licensee management attention should be directed to this area. No decrease in NRC attention is warranted.

- B. Radiological Controls

1. Analysis

During the evaluation period, inspections were conducted by regional and resident inspection staffs.

The licensee's health physics staffing level was adequate and compared well to other utilities having a facility of similar size. An adequate number of ANSI qualified licensee and contract health physics technicians were available to support routine and outage operations.

The performance of the health physics staff in support of routine operation and outages was generally adequate. A method for evaluating beta dose due to skin contamination, developed by the corporate staff, was implemented at the plant.

During the evaluation period, the licensee disposed of 14,119 cubic feet of solid radioactive waste. The radioactive material shipping area was generally well managed, although it accounted for a violation indicated below.

Exposure control was adequate. The licensee posted dose rate and contamination information on maps outside individual rooms. The facility man-rem total for the evaluation period was 456 man-rem which is comparable to other facilities of similar size and type. Personnel exposure record keeping accounted for two violations indicating the need for improvement in this area.

In the confirmatory measurements area, NRC identified the need to evaluate dead time effects on Ge(Li) detector efficiencies and the need for development of administrative control limits for the Interlaboratory Chemistry Cross Check Program. This area accounted for one violation when an inadequate review of gamma

spectroscopy instrument calibration data did not reveal a geometry error during the calibration.

A post accident sampling system inspection identified the system to be inoperable due to the inability to obtain representative samples for certain liquid and dissolved gas analyses. The licensee had not identified the system as inoperable although licensee personnel were aware that certain analyses could not be performed properly.

The eight violations identified during the evaluation period were not viewed as an indication of a programmatic breakdown.

- a. Severity Level IV violation for failure to adequately measure radioactive effluents released to unrestricted areas.
- b. Severity Level IV violation for failure to adequately evaluate a personnel exposure.
- c. Severity Level IV violation for three examples of failure to have adequate procedures or failure to follow procedures.
- d. Severity Level IV violation for failure to post a high radiation area with a flashing light.
- e. Severity Level IV violation for failure to have an operable post accident sampling system.
- f. Severity Level V violation for failure to post a violation of radiological working conditions.
- g. Severity Level V violation for failure to make a procedure change prior to use of the procedure.
- h. Severity Level V violation for failure to post certain documents for workers to review.

## 2. Conclusion

Category: 2

Trend: Same

## 3. Board Recommendations

The conduct of activities in this area showed adequate concern for radiological protection. No decrease in licensee or NRC attention is recommended.

## C. Maintenance

### 1. Analysis

During the evaluation period, routine inspections were performed by the resident and regional inspection staffs. Analysis of the maintenance program revealed that, in terms of programmatic strengths, maintenance activities generally exhibited evidence of adequate preplanning and assignment of realistic priorities.

Procedures were generally adequate and implemented correctly with the following notable exceptions. A nuclear station modification (NSM) to repair and reorient a leaking Unit 2 Pressure Relief Tank (PRT) to shutdown waste gas decay tank (SDWGDT) sample line vessel isolation valve was incorrectly performed; the maintenance crew cut into the incorrect lines and removed the Unit 1 valves instead of the required Unit 2 valves. Although the valves were identified as safety-related, independent verification was not specified for the work and consequently not performed to ensure that the correct components were being removed. This example was not cited as a violation because the NRC was awaiting a reply from the licensee on corrective actions to earlier identified independent verification problems described in the plant operations and surveillance functional areas. Lack of procedural control was also evidenced by the two violations listed below.

Other maintenance related items of noncompliance were discussed in the Plant Operations Section, and were typically associated with problems involving procedural adequacy. Training of maintenance personnel on procedural compliance should receive emphasis from licensee management.

Maintenance related decisions were usually made at management levels adequate to ensure appropriate supervisory involvement. Reviews of maintenance activities were usually punctual, thorough, and valid. The maintenance staffing level was adequate for routine and preventive maintenance programs.

Reviews of maintenance records indicated that they were readily available, generally complete, and adequately maintained.

Licensee in-station investigations were routinely performed to address, assess, and recommend proper corrective actions for both reportable and non-reportable maintenance concerns. Licensee resolutions of maintenance related technical issues generally showed clear and thorough understanding of the issues and were usually conservative and viable. Responses to maintenance related NRC initiatives were typically viable and acceptable, with few outstanding issues attributable to licensee inaction.

Two violations were identified:

- a. Severity Level IV violation for performing unauthorized maintenance on the operating Unit 1B centrifugal charging pump resulting in pump motor destruction when maintenance personnel failed to abide by the requirements of McGuire Maintenance Management Procedure 1.0 concerning Work Request requirements.
- b. Severity Level IV violation for failure to use a procedure resulting in a loss of containment integrity when the seals of the inner door to the Unit 1 personnel air lock were inadvertently deflated.

2. Conclusion

Category: 2

Trend: Same

3. Board Recommendations

This area received proper management attention during the assessment period. No decrease in NRC or licensee attention is recommended.

D. Surveillance

1. Analysis

During the evaluation period, routine inspections were performed by the resident and regional inspection staffs.

Facility surveillance procedures were usually adequate and conducted by qualified personnel. However, surveillance testing accounted for a number of problems in operation of the plant during the evaluation period. These problems, to some extent, appear to have been attributed to insufficient detail in certain procedures which placed too much reliance on personnel training and experience. These procedures also failed to provide explicit instructions regarding requirements for independent verification. Violations (e) and (f) below address inadequate procedures.

The frequency of failure to follow procedures has increased during this assessment period as indicated by violations (c) and (d) below, and in three violations described in the plant operations functional area. These violations received licensee upper management attention. Meetings were held with all station personnel stressing the importance of following and using procedures.



During the review period, the licensee took several actions designed to eliminate or reduce surveillance problems. The actions included a review of procedures for compliance with independent verification requirements; a revision of procedures, where needed, to add detail and signoffs; and an extensive upgrading of independent verification requirements as discussed in the Plant Operations functional area of this report.

Surveillance related decisions usually were made at management levels which were adequate to assure appropriate supervisory involvement. Surveillance activities and evaluations were usually punctual and thorough, however, violations (a) and (b) below indicate missed surveillance tests. Licensee oversight of administrative controls for newly issued Technical Specifications contributed to violation (a). A contributing factor to violation (b) was an inadequate QA program on installation of the reactor vessel level indication system. Surveillance documents, procedures, and records were readily available, complete, and adequately maintained.

Licensee in-station investigations were routinely performed to assess and correct non-reportable as well as reportable surveillance concerns.

Licensee resolution of surveillance related technical issues generally showed a clear and thorough understanding of the issues and was usually conservative. Licensee response to surveillance related NRC initiatives was normally acceptable.

During the evaluation period, the licensee identified a problem concerning the failure to perform soap bubble tests of selected penetrations in order to verify that there was no detectable bypass leakage. The problem was identified while the licensee was conducting a self-initiated review of implementation of the containment surveillance requirements of Technical Specifications. The bypass leakage verification, which, for these selected penetrations, was to be performed in conjunction with the Type A integrated leak rate test (ILRT), was performed during the Unit 1 Type A test which was performed just prior to the beginning of this evaluation period and was also omitted from the Unit 2 Type A preoperational test. When the licensee found the problem, both units, which were in hot standby, were returned to cold shutdown and the soap bubble tests were performed satisfactorily. No violation was issued since the licensee identified, reported, and corrected the problem. The actions taken by the licensee to resolve the problem were both conservative and timely.

An independent NRC evaluation of reactor coolant system (RCS) leakage on both units was performed. Excellent cooperation by the plant staff enabled NRC to obtain the data necessary for the evaluation. Potential problems in both the computer-based and manual calculational methods in use by the licensee were identified. The performance engineering staff gave prompt attention to correcting the deficiencies.

Inspections were performed during this evaluation period of inservice inspection (ISI) of safety-related components, piping, and hangers; steam generator modifications; and control of primary/secondary chemistry. Questions involving ISI, maintenance, welding and non-destructive examination have been handled in a thorough and timely manner.

An inspection of secondary water chemistry control was performed during this assessment period. The licensee appeared to be committed to a sound chemistry control program designed to minimize primary/secondary boundary degradation. This program was staffed with well qualified personnel and maintained state of the art equipment to implement the program.

Six violations were identified as follows:

- a. Severity Level IV violation in that a monthly surveillance was not performed and was inadequate on the Containment Pressure Control System which resulted in degradation of both containment spray systems such that they would not have been able to start and automatically de-energize within designed setpoints, and degradation of both containment air return and hydrogen skimmer systems in which they would not have functioned within the required start and stop permissive.
- b. Severity Level IV violation in that containment penetration leakage tests were not performed prior to unit startup following installation of the Reactor Vessel Level Indication Systems (RVLIS) on Units 1 and 2. Belated test results did show that the penetrations would have maintained containment integrity.
- c. Severity Level IV violation for failure to follow procedure for the power operated relief valve channel test which resulted in a loss of feedwater to the steam generator.
- d. Severity Level IV violation for failure to follow procedures which resulted in a loss of both source range channels.
- e. Severity Level IV violation for an inadequate procedure and failure to follow another amendment to that procedure which resulted in an inadvertent initiation of Train A blackout sequence during circuit testing.

- f. Severity Level IV violation for use of an inadequate procedure and drawing with the following two examples given: (1) failure to restore an auxiliary containment spray system vent valve to its normally closed position following completion of an upstream check valve surveillance test; and (2) use of a misleading electrical drawing that contributed to an erroneous lead lift while troubleshooting a circuit which resulted in main steam isolation valve closure and reactor trip.

2. Conclusion

Category: 2

Trend: Improved

3. Board Recommendations

Performance in this area was evaluated as Category 2 due to improvements which occurred in the latter part of the assessment period. Had performance continued at the level exhibited in the early part of the period, a Category 2 rating would not have been justified. The licensee should continue a high level of attention to this area.

E. Fire Protection

1. Analysis

Limited inspections were performed by region based and resident inspectors. One violation shown below in the fire protection area was identified. It should be noted that immediately following this assessment period, the Standby Shutdown Facility was inspected on September 4-6, 1984 and a special team inspection of Appendix R compliance was performed during the week of September 24, 1984. The findings were significant, resulting in apparent violations that will be addressed in the next assessment period.

The violation during this assessment period was:

Severity Level IV violation for failure to perform surveillance on valve positioning of the annulus sprinkler system.

2. Conclusion

Category: Not Rated

Trend: Not Determined

### 3. Board Recommendations

There was insufficient inspection activity in this area to justify a rating or to determine a performance trend.

## F. Emergency Preparedness

### 1. Analysis

During the assessment period, inspections were performed by regional and resident inspection staffs. These included observation of a full-scale exercise and two routine inspections addressing emergency responses and related implementing procedures.

Routine inspections and exercise observations indicated that the emergency organization and staffing were adequate. The corporate emergency planning organization provided adequate support to the plant. Key positions in corporate and plant emergency response organizations were filled. Corporate management appeared to be committed to maintaining an effective emergency response program, and was directly involved in the annual exercise and the followup critique. The licensee has been responsive to NRC initiatives on emergency preparedness issues.

Personnel assigned to the emergency organizations were adequately trained in required areas of emergency response. Training records of shift supervisors documented that required familiarization training was conducted in accordance with the emergency plans and implementing procedures. Individuals were cognizant of their responsibilities and authorities, and understood their assigned functions during routine operations and simulated emergency situations.

The following essential elements for emergency response were found acceptable: emergency classification; notification and communications; public information; shift staffing and augmentation; emergency preparedness training; dose projection and assessment; emergency worker protection; post accident measurements and instrumentation; changes to the Emergency Preparedness Program; and annual quality assurance audits of the plant and corporate emergency planning programs. The exercise demonstrated that the plan and procedures could be effectively implemented in the areas of communications, accident assessment, and exposure control.

An adequate working relationship existed between the licensee and offsite emergency support organization.

No violations were identified regarding the licensee's implementation of the Emergency Planning program or any related Technical Specifications.

## 2. Conclusion

Category: 1

Trend: Same

## 3. Board Recommendations

Licensee management involvement in this area was aggressive. No decrease in licensee or NRC attention is recommended.

## G. Security and Safeguards

### 1. Analysis

Inspections were performed in this area by the resident and regional inspection staffs. A special inspection was conducted to review the licensee's actions on an improper manipulation of non-vital equipment valves. The licensee's approach to the resolution of this issue, as well as other technical issues reviewed during the assessment period, was characterized by sound and timely corrective measures.

The licensee usually exhibited strong management involvement in the resolution of security related matters. This was evidenced, in part, during a management meeting held on August 15, 1984, in which NRC concerns were discussed regarding an inoperable Standby Shutdown Facility (SSF). With the SSF inoperable, the appropriate security compensatory measures were not implemented. An apparent significant violation of this matter is currently under review and will be discussed in the next SALP report.

Reportable events were promptly reported with corrective actions performed in an adequate and timely manner. The security organization was adequately staffed with trained and qualified personnel. The effectiveness of the security program was evidenced by the positive morale of security force members and continued managerial support at both corporate and station levels.

Two violations were identified during the assessment period. The violations were not indicative of a significant breakdown in the security program. Notwithstanding the above, the licensee's resolution of security issues was prompt and thorough.

The violations were:

- a. Severity Level IV violation concerning an inadequate vital area barrier.



- b. Severity Level IV violation concerning failure to provide total intrusion detection capability at the protected area boundary.

2. Conclusion

Category: 2

Trend: Same

3. Board Recommendations

Management involvement in this area was evident. No decrease in licensee or NRC attention is recommended.

H. Refueling

1. Analysis

During this evaluation period, inspections were performed on Unit 1 refueling activities by the regional and resident inspection staffs. Technical reviews and evaluation of refueling activities were typically punctual, thorough and valid.

Personnel staffing during refueling and fuel loading was adequate with authorities and responsibilities defined in the refueling procedures. Procedures and policies were strictly adhered to by the licensee. A defined program for training and qualification was implemented for a large portion of the staff. Acceptable and timely resolutions were generally proposed in response to NRC initiatives.

During Unit 1 refueling activities, the licensee encountered difficulties in fuel handling which was a result of fuel rod bow. Approximately one-third of the fuel assemblies exhibited various degrees of rod bow and twisting. A contributing factor to rod bow was believed to be extended operation at 50 percent power or less. Integrity of the fuel rods was not compromised. The licensee reviewed this matter with the fuel vendor, Westinghouse, and determined that it was not of significant concern.

In the area of refueling operations, no violations or deviations were identified.

Licensee performance has remained essentially constant over the course of the SALP assessment period.

## 2. Conclusion

Category: 1

Trend: Same

## 3. Board Recommendations

Licensee management attention to this area was orientated towards nuclear safety. No decrease in licensee or NRC attention is recommended.

# I. Quality Assurance Program

## 1. Analysis

During this evaluation period, routine inspections were performed by the resident and regional inspection staffs. Inspection at the site included a review of the quality program associated with the steam generator modifications. Inspection findings indicated that the plans and procedures had been established to assure that the modification project was controlled and accomplished consistent with commitments and requirements. NRC findings concluded that it was.

A review of selected QA records of the nondestructive examination program (i.e., magnetic particle examination and radiography) for a number of welds indicated that the quality records were compatible and consistent with the applicable procedures and the code for the welds. The licensee continued to maintain a strong QA organization supported by management which was committed to doing the job correctly and maintaining a safe plant. Interviews with licensee personnel determined that the QA program was adequately stated and understood.

An inservice inspection review of the program, procedures, and work activities associated with the Unit 1 refueling outage indicated that the areas included in quality assurance (QA) program requirements for organizational structure, audit requirements, and general QA requirements were being met.

A weakness was identified in the QA program for installation of the reactor vessel level indication system (RVLIS). It was later determined by the licensee's QA review that the RVLIS penetration welds had not been tested and the tubing employed was not the standard required for safety-related systems. However, the penetrations were subsequently tested and it was shown that containment integrity could be met.

The staffing and training of QA personnel were adequate. The training of other personnel, licensed and non-licensed, contributed to improved understanding of work and procedural adherence although a few personnel errors still occurred.

The following violation was identified:

Severity Level V violation for failure to maintain sufficient, identifiable and retrievable calibration records for the containment pressure control system alarm modules.

2. Conclusion

Category: 2

Trend: Same

3. Board Recommendations

Although licensee resources in this area were adequate, operational weaknesses existed which were not identified by the QA organization or, if they were identified, were not effectively resolved. The focus of licensee management should be directed toward this issue.

J. Licensing Activities

1. Analysis

During this evaluation period, the licensee's performance was based on their submittal and response to licensing actions. Pertinent licensing actions that received NRC review are provided in detail in the supporting data and summaries section of this report (paragraph V.C.).

Management involvement in assuring quality work was evident by the review of their submittals; the licensee spent a considerable amount of time in the planning and assignment of priorities to the licensing actions. Typical areas where management involvement was evident were in the Unit 1, cycle 2 reload and Unit 2 reduced reactor coolant system flow issues.

In the resolution of technical issues, the licensee has exhibited a clear understanding of issues and a technically sound and thorough approach in almost all cases.

Licensee response was prompt. The licensing actions involved submittal of voluminous documents and reports. Typical of these were required analyses which were submitted well in advance (5 months) of the targeted approval date. Supplemental supporting documentation from both the licensee and the licensee's vendor in response to technical staff discussions was promptly provided.

An expedited notification was provided to the staff of a potential plant derating by the licensee in requesting an emergency technical specification change [use of base load operation limit in addition to relaxed axial offset control (RAOC) operation]. In this matter, the licensee demonstrated anticipatory management qualities and exhibited responsiveness by providing adequate and complete data and justification for an emergency change in the technical specifications. This responsiveness enabled the staff to promptly authorize the change.

The spent fuel pool rerack design was reviewed during this assessment period, but not completed. However, the licensee's response in addressing special staff concerns regarding related structural aspects by promptly arranging for direct vendor input as well as for two vendor site meetings and inspections, would further demonstrate a high degree of responsiveness. This prompt and full response on the part of the licensee enabled the staff to complete its evaluation on a schedule consistent with the licensee's operational program.

In summary, the licensee's responsiveness was judged to be timely and prompt and the resolutions proposed were usually acceptable with little or no modification.

With regard to staffing, an assessment was made for the safeguards licensing action. In this area, the personnel positions, authorities and responsibilities were well defined. The licensee's safeguards training, and qualification plan and procedures contributed to a well defined security program.

## 2. Conclusion

Category: 1

Trend: Same

## 3. Board Recommendations

A high level of performance in this area was achieved. No decrease in licensee attention is recommended.

## K. Startup Testing

### 1. Analysis

Startup testing of Unit 2 was completed during this period. The majority of tests, particularly those conducted by the performance and reactor engineering staff, were promptly and properly evaluated after performance. The startup tests performed and completed with their respective evaluations included zero power physics testing and power escalation testing. Power escalation testing consisted of a variety of transients such as turbine trip test, loss of offsite power test, loss of control room test, and loss of electrical load test. The piping dynamic response following loss of electrical load was performed on August 12, 1983, and an inspection on September 27-30, 1983, revealed that the test had yet to be completely reviewed and the results evaluated. Subsequently, a licensee evaluation was performed. As a result of the test, some of the pipe supports were found to be deformed by the test; however, the licensee's evaluation showed that no system integrity was compromised by the inoperative supports.

Excellent cooperation in inspecting the program was received from the licensee's reactor and performance engineering staff. No deficiencies in the conduct of the tests were noted. The power escalation test program has been completed and the startup reports together with supplements were submitted to NRC as required by the Technical Specifications. Subsequent to this assessment period, NRC completed their review of the licensee's startup program and concluded that it was satisfactorily completed.

### 2. Conclusion

Category: 1

Trend: Same

### 3. Board Recommendations

Licensee resources were effectively used in this area.

## V. SUPPORTING DATA AND SUMMARIES

### A. Licensee Activities

During the assessment period, the licensee completed modifications to the preheater sections of Model D3 steam generators and main feedwater lines for Unit 2, thereby allowing the unit to operate at 100 percent power. Identical modifications were also completed on Unit 1 Model D2 steam generators prior to the beginning of this assessment period. The accumulated radiation exposure to personnel in performing these modifications was lower than projected.



Unit 1 was restricted in power operation to approximately 95 percent power due to a stuck closed main turbine governor valve. This condition existed from October 3, 1983 through the first refueling outage that commenced on February 24, 1984. The valve was then restored to an operable condition. During the refueling outage 59 Westinghouse standard fuel assemblies were replaced with newly designed optimized fuel assemblies (OFA). Major advantages for utilizing OFA are increased efficiency in the core and reduced fuel cycle costs. The in-containment portion of the incore thermocouple system, a NUREG-0737 item, was upgraded.

Unit 2 achieved initial criticality on May 8, 1983 and ultimately reached 100% reactor power during this evaluation period. The unit was declared commercial on March 1, 1984. The Unit 2 reactor vessel level indication system was installed during the steam generator outage. Other relatively short-term outages for modification included the sealing of electrical conduit couplings of equipment inside containment to prevent moisture intrusion (work performed on both units) and replacement of Unit 2 two-inch residual heat removal system piping sections that cross-connect to the letdown portion of the chemical and volume control system. In addition, the licensee commenced work on Unit 2 spent fuel pool rerack modifications which consist of high density two region racks.

The Institute of Nuclear Power Operations (INPO) conducted an evaluation of management controls and operating practices during the weeks of August 6 and 13, 1984, and an emergency preparedness exercise was conducted November 1 and 2, 1983.

#### B. Inspection Activities

During the assessment period, routine inspections were performed at the McGuire facility. Areas inspected included, but were not limited to, facility operations, radiation protection, radiological controls, surveillance activities, maintenance activities, fire protection, emergency preparedness, security and safeguards, refueling activities, steam generator modification activities, inservice inspection, and quality assurance. Three special inspections covered inoperability of containment spray systems, inoperability of a centrifugal charging pump electrical breaker, and general training assessment. Three team inspections covered followup of significant events (Unit 2 upper head injection system sight glass rupture and Unit 1 loss-of-offsite power), administrative controls of NUREG-0737 items, and an emergency preparedness drill.

### C. Licensing Activities

The licensing actions reviewed during this assessment period were as follows:

- Appendix R, Sec. III.J - Emergency lighting
- Deletion of boron injection tank
- Unit 1, cycle 2 core reload
- Diesel generator fuel oil surveillance
- Use of base load operation limit in addition to relaxed axial offset control operation
- Inoperable control room ventilation system
- Surveillance inaccessible fire protection system valves
- Unit 2 reduced reactor coolant system (RCS) flow at 100%
- Containment lower compartment air temperature
- Surveillance turbine overspeed and diesel generator testing
- Detailed control room design review
- Safeguards

### D. Investigations and Allegations Review

No major investigative activities occurred during this assessment period.

### E. Escalated Enforcement Actions

#### a. Civil Penalties

One civil penalty of \$40,000 was assessed for a Severity Level III violation regarding inoperability of the containment spray system.

#### b. Orders (only those relating to enforcement)

No orders were issued during the assessment period.

### F. Management Conferences Held During Appraisal Period

#### a. Conferences

An enforcement conference was held on October 19, 1983, to discuss inoperability of both containment spray systems, mispositioned containment spray system recirculation valve, and failure to perform monthly surveillance of the annulus sprinkler system.

An enforcement conference was held on May 9, 1984, to discuss improper restoration of the centrifugal charging pump breaker and independent verification for operating activities.

A management meeting was held on August 15, 1984, to discuss the design and operation of the Standby Shutdown Facility (SSF) and how it satisfied the requirements of Appendix R to 10 CFR Part 50. Also, discussed was the impact on facility safeguards related to SSF operation.

b. Confirmation of Action Letters

No confirmation of action letters were issued during this assessment period.

G. Review of Licensee Event Reports and 10 CFR 21 Reports Submitted by the Licensee

During the assessment period, there were 113 LERs reported for Unit 1 and 90 for Unit 2. No 10 CFR Part 21 reports were submitted by the licensee. The distribution of these events by cause, as determined by the NRC staff, was as follows:

<u>Cause</u>	<u># LERs</u>	
	<u>Unit 1</u>	<u>Unit 2</u>
Component Failure	49	44
Design	17	7
Construction, Fabrication or Installation	7	5
Personnel		
- Operating Activity	4	8
- Maintenance Activity	6	4
- Test/Calibration Activity	17	10
Other Activity	2	6
Out of Calibration	2	2
Other	9	4
TOTAL	113	90

TABLE 1  
INSPECTION ACTIVITY AND ENFORCEMENT

FUNCTIONAL AREA	DEV	NO. OF VIOLATIONS IN EACH SEVERITY LEVEL				
		V	IV	III	II	I
Operations	1	3	7	3		
Radiological Controls		3	5			
Maintenance			2			
Surveillance			6			
Fire Protection			1			
Emergency Preparedness						
Security and Safeguards			2			
Refueling						
Quality Assurance Program		1				
TOTAL	1	7	23	3		