ENCLOSURE

SALP REPORT

U.S. NUCLEAR REGULATORY COMMISSION

REGION II

SYSTEMATIC ASSESSMENT OF LICENSEE PERFORMANCE

NRC INSPECTION REPORT NUMBERS

50-321/88-18 AND 50-366/88-18

Georgia Power Company

E. I. Hatch Nuclear Plant, Units 1 and 2

January 1, 1987 - June 30, 1988

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I. INTRODUCTION

A. Purpose and Overview

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

An NRC SALP Board composed of the staff members listed below met on August 17, 1988, to review performance observations and data to assess licensee performance in accordance with 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 and management performance at Hatch for the period January 1, 1987, through June 30, 1988.

B. SALP Board for Hatch Units 1 and 2

Board Chairman

L. A. Reyes, Director, Division of Reactor Projects (DRP), Region II (RII)

Board Members

V. L. Brownlee, Chief, Reactor Projects Branch 3, DRP, RII
L. P. Crocker, Project Manager, Hatch, Project Directorate II-3, Office of Nuclear Reactor Regulation (NRR)
D. B. Matthews, Director, Project Directorate II-3, NRR
J. E. Menning, Senior Resident Inspector, Hatch, DRP, RII
E. W. Merschoff, Deputy Director, Division of Reactor Safety (DRS), RII
J. P. Stohr, Director, Division of Radiation Safety and Safeguards (DRSS), RII

Other Attendees at SALP Board Meeting

S. S. Adamovitz, Senior Radiation Specialist, Radiological Effluents and Chemistry Section, Emergency Preparedness and Radiological Protection Branch (EPRPB), DRSS, RII
G. A. Belisle, Chief, Quality Performance Section, Operations Branch (OB), DRS, RII
J. J. Blake, Chief, Materials and Processes Section, Engineering Branch (EB), DRS, RII
T. Decker, Chief, Emergency Preparedness Section, EPRPB, DRSS, RII
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C. M. Hosey, Chief, Radiological Effluents and Chemistry Section, EPRPB, DRSS, RII
F. Jape, Chief, Test Program Section, EB, DRS, RII
E. Lea, Reactor Inspector, Quality Performance Section, OB, DRS, RII
T. C. MacArthur, Reactor Inspector, TSS, DRP, RII
P. M. Madden, Senior Reactor Engineer, TSS, DRP, RII
D. R. McGuire, Chief, Physical Security Section, Nuclear Materials Safety and Safeguards Branch, DRSS, RII
R. Musser, Resident Inspector, Hatch, DRP, RII
S. Q. Ninh, Reactor Engineer, TSS, DRP, RII
M. V. Sinkule, Chief, Reactor Projects Section 3B, DRP, RII
R. D. Starkey, Reactor Engineer, Operational Programs Section, OB, DRS, RII
L. Trocine, Project Engineer, Reactor Projects Section 3B, DRP, RII
D. C. Ward, Reactor Inspector, Plant Systems Section, EB, DRS, RII

II. CRITERIA

Licensee performance is assessed in selected functional areas depending on whether the facility has been in the construction, preoperational, or operating phase during the SALP review period. Each functional area normally represents an area which is significant to nuclear safety and the environment and which is a normal programmatic area. Some functional areas may not be assessed because of little or no licensee activity or because of a lack of meaningful NRC observations. Special areas may be added to highlight significant observations.

One or more of the following evaluation criteria was used to assess each functional area; however, the SALP Board is not limited to these criteria and others may have been used where appropriate.

A. Management involvement in assuring quality
B. Approach to the resolution of technical issues from a safety standpoint
C. Responsiveness to NRC initiatives
D. Enforcement history

E. Operational and construction events (including response to, analysis of, and corrective actions for)
F. Staffing (including management)
G. Training and qualification effectiveness

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

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 quality 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 quality 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 quality 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 the judgment of NRC management as to the significance of individual items.

The SALP Board may also include an appraisal of the performance trend of a functional area. This performance trend will only be used when both a definite trend of performance within the evaluation period is discernable and the Board believes that continuation of the trend may result in a change of performance level. The trend, if used, is defined as:

Improving: Licensee performance was determined to be improving near the close of the assessment period.

Declining: Licensee performance was determined to be declining near the close of the assessment period.

III. SUMMARY OF RESULTS

A. Overall Facility Performance

Hatch Nuclear Plant is staffed and operated by knowledgeable and well qualified personnel. The reorganization of site management which was implemented during the latter stages of the previous SALP period has been very effective in establishing excellent availability and capacity factors as evidenced by the operational performance of both Hatch units during this SALP period. However, the reorganization of site management has not been fully effective in bringing sufficient pressure to bear to achieve a comparable level of excellence in the implementation of management controls in other aspects of plant operations and in the areas of fire protection, emergency preparedness, and training. The reorganization placed all support activities under a Plant Support Manager and all operational activities under a Plant Manager. During this assessment period, operations and maintenance management staffing changes were made with well-qualified incumbents and are evidence of the continued management effort to further improve performance at Hatch.

During the latter days of this assessment period, corporate management was completely reorganized in anticipation of formation of the new operating company. The reorganization has placed new managers in the senior positions in charge of nuclear activities. The transition appears to have been implemented smoothly, and it appears to have had no adverse impact on plant operation.

On the morning of January 13, 1988, Georgia Power Company entered into a scheduled 65-day refueling outage for Hatch Unit 2. Before being removed from service, the unit had operated for 143 consecutive days and, combined with Hatch Unit 1 (which was in its 161st consecutive day of operation), achieved the best availability and capacity factor of all multi-unit Boiling Water Reactors worldwide in 1987. Hatch Unit 2 had the second best availability worldwide. Several other Georgia Power Company records were also set.

Fifteen reactor scrams were received during this assessment period. This is compared to fourteen during the previous period. A number of these scrams were related to problems with balance of plant systems. Performance indicators for safety system actuations and equipment forced outages per 1000 critical hours showed Hatch to be average when compared to other plants, and performance indicators for forced outage rates showed Hatch to be better than average when compared to other plants. The number of safety system failures had increased near the end of the period and was considerably higher than to the industry average.

When compared to the last SALP, an improvement in performance level was observed in the areas of security and licensing. The improvement seen in the security area was primarily due to an increase in

management and corporate involvement and to upgrades performed on the computer system. The improvement in licensing was due to, among other things, active management interest in maintaining control of and assuring the quality of licensing issues.

A decline in performance level was seen in the functional areas of fire protection, emergency preparedness, and training. The decline in performance observed in the fire protection area was primarily due to deficiencies identified during fire brigade training and drill activities. We are concerned that management attention to fire protection activities may have declined as a result of the removal of Fire Protection Program details from the technical specifications. This action should not be construed as a reduction in significance, and management attention in this area should not be de-emphasised. The decline in the area of emergency preparedness was primarily due to a change in onsite personnel with an attendant break in program management continuity. The current program is improving but has yet to achieve the desired level of excellence. Additionally, the decline in the area of training was due principally to a lack of proper emphasis on training to handle abnormal conditions. This was evidenced by some operators inadequately responding to selected abnormal events on the simulator. Weaknesses in the Emergency Operating Procedures (EOP) were also noted because of their complexity and the lack of justification for deviations from the Emergency Procedure Guidelines, which we understand will be resolved in the near future. Deficiencies in training were also noted in the areas of fire protection and emergency preparedness.

Performance ratings in the functional areas of plant operations, radiological controls, maintenance, surveillance, refueling/outages, and quality programs and administrative controls affecting quality have remained unchanged. However, the following concerns and/or observations are presented below for your actions as appropriate:

- The number of the events caused by personnel and procedural errors (i.e., failure to follow procedures, deficient procedures, lack of attention to detail, cognitive personnel errors, and administrative control problems) is high, particularly in the surveillance testing area. Additionally, management had not placed emphasis on ensuring that control room drawings were readily usable by operators for response to abnormal events. Management should also place high priority on completing the Procedure Upgrade Program which was initiated late in 1985 to review procedures for technical adequacy and verify procedure usability.

- While the licensee's efforts to improve several aspects of the Radiation Control Program are recognized, one area which remains a concern is personnel contaminations. Although the number of personnel contaminations received at Hatch in 1987 was sharply reduced, the number is still greater than the number received at most other Region II facilities.

- Although improvement in the maintenance area was noted, the number of reactor scrams has not been decreasing and the number of safety system failures has been increasing. Based on these facts and the fact that there were recurring events and events for which the root cause could not conclusively be determined, the licensee should continue to place management attention on the programs for root cause identification and expeditious completion of corrective actions. Additionally, licensee management had not performed design reviews in response to industry experience related to check valve failures.

In March 1988, an Institute of Nuclear Power Operations (INPO) evaluation identified a number of issues including the state of training of operators on use of EOPs, plant drawings, clearances, labeling, professionalism of the operators, and control room annunciators. As a result of these findings, the licensee voluntarily shut down both units for approximately 30 days to implement corrective actions. Licensee senior management was involved in ensuring that corrective actions to address the INPO findings were adequate.

Subsequent to the shutdown, a previously scheduled NRC Emergency Operating Procedure Inspection Team and an Operational Performance Assessment Team performed inspections and independently verified, as part of their normal scope of inspection, that there were no safety issues that would call into question the licensee's subsequent decision to restart the reactors. Licensee management briefed NRC management on the INPO findings and kept the NRC informed of the corrective actions being taken.

B. Facility Performance Summary

Functional Area	Previous SALP Dates Cycle VI 07/01/85 to 12/31/86	Current SALP Dates Cycle VII 01/01/87 to 06/30/88
Plant Operations	2	2
Radiological Controls	2	2
Maintenance	2	2
Surveillance	2	2
Fire Protection	1	2
Emergency Preparedness	1	2
Security and Safeguards	3 (Improving)	2
Refueling/Outages	2	2 (Improving)
Quality Programs and Administrative Controls Affecting Quality	2	2
Licensing Activities	2	1
Training and Qualification Effectiveness	1	2

IV. PERFORMANCE ANALYSIS

A. Plant Operations

1. Analysis

During the assessment period, inspections of plant operations were performed by the resident, regional, and headquarters inspection staffs. Team inspections in the areas of Emergency Operating Procedures (EOP), Operational Performance Assessment (OPA), and Quality Verification Function Inspection (QVFI) were also performed.

Management involvement with plant operations continued at a high level during this assessment period. Members of the managerial staff were frequently observed in the main control room during all modes of operation. A Deputy Manager of Operations position was created to provide managerial coverage in the absence of the Manager of Operations. Additional staffing was also provided to the Operations Support Group to enhance operation's engineering support of day-to-day activities. A Radwaste Supervisor position was added to provide more focused and long-range supervision of radwaste operations, and a Shift Foreman position was created in the Operations Department to assist the unit

Shift Supervisors in the preplanning and supervision of inplant activities. Shift Technical Advisors were organizationally moved to the Operations Department, and their duties were redefined to improve technical support of the unit Shift Supervisors.

The Shift Supervisors were knowledgeable of plant conditions and displayed the same positive qualities demonstrated by unit operators and equipment operators. Additionally, they maintained a positive control over access to the vicinity of the control room panels. In general, control room operations was noted as a strength.

NRC inspections made positive observations regarding control room demeanor and operating staff professionalism. Control room activities were carried out in a professional manner; and Reactor Operators were attentive to control room conditions, responsive to annunciators, and followed procedures. When leaving the vicinity of the controls room panels, operators made certain that a qualified relief was present.

A concern was noted in that the Shift Supervisor had a large administrative burden in addition to his prime function of being cognizant of his unit's status. The licensee is evaluating the need for a third Shift Supervisor to reduce the administrative burden. Additionally, as mentioned above, the position of Shift Foreman has been created in the Operations Department within the last few months to provide direct supervision of Plant Equipment Operators involved in tagging operations and other in-plant activities.

Additionally, a concern was identified involving the large number (637) of temporary changes to plant procedures that had been issued in 1988. Many of these temporary changes were being reissued every 30 days instead of being permanently incorporated into plant procedures. Apparently, there was a tendency not to make permanent procedure revisions because the changes were to be incorporated into plant procedures during the Procedure Upgrade Program (PUP).

Shift turnovers were conducted in a professional manner. Checklists were utilized by the Shift Supervisor, the Reactor Operator, and the Shift Technical Advisor to ensure that sufficient information was transferred regarding plant conditions. Turnovers included panel walkdowns, review of logbooks, and discussion of plant conditions and other items of importance. One concern was noted with the Shift Supervisor's turnover. The turnover was not a "quiet time" and was often interrupted by phone calls and personnel queries. The licensee has taken steps to limit potentially distracting activities within the main control room during turnovers and at all other

times. Towards the end of the assessment period, the licensee placed procedural limits on the number of personnel allowed in the vicinity of the control room panels. Additionally, only one person at a time is allowed at the Shift Supervisor's desk. Concerns still exist over the number of information-seeking phone calls made to control room personnel, particularly the Control Room Operator early in the shift.

On the morning of January 13, 1988, Georgia Power Company entered into a scheduled 65-day refueling outage for Hatch Unit 2. Before being removed from service, the unit had operated for 143 consecutive days and, combined with Hatch Unit 1 (which was in its 161st consecutive day of operation), achieved the best availability and capacity factors of all multi-unit Boiling Water Reactors worldwide in 1987. Hatch Unit 2 had the second best availability worldwide.

New Georgia Power Company records set for dual unit operation of Plant Hatch in 1987 included:

- Consecutive days on-line: 143
- Electrical generation: 10,832 megawatt-hours (net)
- Capacity factor: 82 percent
- Availability factor: 88 percent
- Forced outage rate: 2.7 percent
- Industrial safety: 10.88 million man-hours. The industrial safety record was an all-time record for the electrical utility industry (hours worked without a lost-time accident)

The new operating availability records indicated management attention to plant operations during 1987. Unit 1 maintained an overall availability factor of approximately 89.1 percent excluding the planned outages and experienced an average of 0.95 scrams/1000 hours the reactor was critical during the assessment period. This is compared to the national average of 0.54 scrams/1000 critical hours for General Electric reactors in 1987. Unit 2 maintained an availability factor of 87.8 percent excluding the planned outages and experienced an average of aproximately 1.13 scrams/1000 hours critical during the assessment period. The average forced outage rate for both units in 1987 was 2.71 percent; and the median industry forced outage rate for the period July 1, 1986, through June 30, 1987, was 6.6 percent.

A description of the plant scrams encountered during this assessment period is provided in Section V.K of this report. Seven of the fifteen listed scrams occurred during the first six months of 1988. Additionally, of the fifteen listed scrams, eleven were due to equipment failure, one was due to non-licensed personnel error, and three were due to inadequate

procedures. The three instances of inadequate procedures do not appear to be indicative of a programmatic problem. However, the root cause analyses and corrective actions taken in response to equipment failures may have been inadequate in several cases resulting in repetitive type events. Two scrams were caused by the failure of vital AC inverters which had been the subject of an industry precursor. In each case, failure of the vital AC inverter was attributed to high room temperatures. Two scrams occurred during identical stages of turbine control valve testing. In the first event, the scram was attributed to a spurious reactor protection system trip. The second scram was attributed to an electrohydraulic system fluid pressure transient. Additionally, the two scrams that resulted from turbine trips were attributed to spurious conditions. In order to correct this, the licensee has taken positive actions to improve the event review process. Formal root cause training is being provided to root cause investigation teams. Also, a hierarchical approach for event reviews based on significance is being implemented.

Operating events at Hatch have been reported promptly, accurately, and conservatively. The licensee's 10 CFR 50.72 reports indicate that events have been reported in a timely manner and that corrective action was promptly taken. The total number of Licensee Event Reports (LER) issued for both units during this assessment period (59) was significantly lower than the number reported for both units during the previous period (94) and was also lower than the national average for dual unit Boiling Water Reactors during this assessment period (86, 43 per unit).

The LERs adequately described all major aspects of the events, including all component or system failures that contributed to the event, root cause, and significant corrective actions taken. The reports were thorough, detailed, and generally well written and easy to understand. Previous similar occurrences were properly referenced in the LERs as applicable.

Our evaluation of the LERs, which can assign multiple causes to an event, indicates that a large number of problems at the Hatch units during the reporting period involved procedure or other administrative control problems. Many of the procedure or other administrative control problems were identified as a result of the licensee's PUP. A large number of problems at Hatch also involved errors by personnel. Although few of the errors by personnel involved licensed operators, the number of cognitive personnel errors is a concern. Additionally, some of the LERs reviewed during this reporting period involved repetition of earlier problems. For example, the Main Control Room Environmental Control System at Hatch Unit 1 actuated in the pressurization mode of operation six times in 1987. Four of the

events were caused by a failure of the area radiation monitor's Geiger-Meuller tube. In addition to repetitive events, a number of events involved "spurious" actuations or isolations where the root cause was not determined. What appears to be needed is an aggressive program to identify root causes of both hardware and procedure problems and a concerted effort to expedite corrective actions.

The plant personnel were critical and thorough in documenting deficiencies in housekeeping. Areas of the plant such as the reactor buildings, which were frequently toured, were neat and orderly. However, continued emphasis on general material preservation and housekeeping of the less-frequently toured areas such as the intake structure was needed. For instance, three safety-related service water pumps were observed in an open area adjacent to the intake structure. One pump was rusty, and its components were detached. The second pump was also partially disassembled, and the intake bell of the third pump was exposed to the elements. Bolting, impellers, and other items associated with the pumps were found in various locations around the pumps. The licensee subsequently established bins at this location for both new and reusable items. In general, the facilities were in good condition, plant housekeeping was good, and storage of equipment and material allowed for access to plant areas necessary for maintenance. Procedures for housekeeping and equipment storage have recently been improved. For instance, housekeeping inspections are now required on a weekly basis and clean-up responsibilities are now defined. Efforts to minimize the extent of surface contamination throughout the plant continue. The reduction of contamination facilitated better housekeeping and plant operations.

Licensee management was generally responsive to adequate resolution of technical issues and to NRC initiatives; however the licensee was not responsive to problems identified with the EOPs prior to an INPO evaluation conducted in March 1988. During 1987, the licensee had indications that the EOPs were deficient and did not take action to correct them. The following is a summary of these indications:

- During the period April 20-23, 1987, an NRC Operator Licensing Examiner observed that the EOPs were complex and contained human factor deficiencies. The observation was forwarded to the licensee in a letter from the NRC in June 1987.

- During the period November 30 to December 11, 1987, an NRC OVFI made the observation that the EOP flowchart format in the control room was not adequately legible.

- The QVFI also pointed out that a licensee Quality Assurance audit identified legibility problems with the EOPs in October 1987.

INPO conducted an evaluation of Hatch Units 1 and 2 on March 14-25, 1988. Results of the evaluation were presented orally to Georgia Power Company at an exit briefing on April 15, 1988. On April 19, 1988, the NRC was advised by the licensee that it was shutting down both Hatch units pending completion of corrective actions in response to the INPO findings.

A management meeting between the NRC and GPC was held on April 19, 1988, at the NRC's request. During this meeting, GPC provided to Region II its understanding of the areas of major concern to INPO. These areas were as follows:

- The ability of shift crews to respond to plant transients needed improvement as demonstrated on the simulator. This item included improvements in the physical size and complexity of the EOPs.

- During a plant startup and heatup, monitoring and control of the reactor and behavior in the control room were not up to industry professional standards.

- The capability of control room personnel to determine the plant status and respond to plant conditions in an optimum manner was impaired by administrative problems and equipment conditions such as the following:

  - Updates of plant critical drawings in the reactor control room to incorporate changes to the As-Built configuration were not performed in a timely or usable manner to allow operators to quickly assess plant status.

  - Many instrument panel components and plant equipment components were not identified with permanent labels.

  - Under routine conditions, there were numerous annunciators that were continuously lighted and alarms that frequently recurred due to either the present design or equipment/system abnormalities.

  - Numerous equipment clearances had remained in effect for several years.

The INPO evaluation also determined that the operators did not respond well to abnormal situations and that licensee management had not taken steps to enhance programs (EOPs, drawings, lighted annunciators, clearance control, labelling) such that they would not result in a burden on the operators.

During the voluntary shutdown period, EOPs were upgraded to make them more legible, operators were retrained on the use of the EOPs, steps were taken to enhance professionalism of the Reactor Operators, critical drawings were marked up to improve usability, the equipment labelling program was enhanced, a revised control room annunciator policy was developed and implemented, and many long standing equipment clearances were eliminated.

Subsequent to the INPO evaluation, two previously scheduled NRC team inspections were performed: an EOP and an OPA inspection.

The EOP team concluded that the EOPs were usable by well trained operators. However, the EOP team found that:

- deviations between the EOPs and the plant specific technical guidelines have not been well documented and were not totally consistent with the industry generic Emergency Procedure Guidelines strategy,

- the flowcharts were too complex and deficient from a human factors standpoint, and

- the flowcharts were such that delays in operator action for containment control and other time sensitive actions could occur.

Subsequent to the EOP inspection, the licensee developed a long-term plan and schedule for upgrading and simplifying the EOPs, the majority of which is scheduled to be completed by December 1988. A major revision of the EOPs is planned to include a simplification of the flowcharts to consolidate or remove directions that are not part of the accident strategy. It will also minimize the number of steps, improve the language for operator use, and enlarge print size to make the charts more readable.

The OPA team verified that the actions committed to by the licensee to correct the INPO findings were implemented and that the operational programs were adequate. Additionally, the OPA verified that the revised drawing program implemented subsequent to the INPO evaluation was less burdensome to the operators. The licensee's new program consisted of the establishment of a "blue line" stick drawing file in each control room with system changes entered as "red lines" on the drawing referencing the appropriate "As-Built Notice."

The OPA inspection also verified that the licensee had initiated a program for placing high priority on correcting problems with control room annunciators. A new procedure was written which provided the method by which Operations personnel were to control, track, and correct problems with all annunciators;

track removal from and return to service of main control room instruments for corrective maintenance; and provide tracking of compensatory monitoring actions.

Subsequent to the INPO evaluation, the licensee took timely corrective action in cases where professionalism problems were identified. More specifically, a code of conduct for Control Room Operators was developed and endorsed by the Operations Department with input from the operators, and procedures were changed to limit activities within the control room and to more clearly define operator responsibilities. The code of conduct document was distributed to each licensed operator and was posted in the control room and in other plant locations. This document addresses clear communications, monitoring of panels, response to alarms, control room access, and other issues. It also provides a high standard for control room conduct.

During this assessment period, a Severity Level III violation with a $50,000 civil penalty was issued on April 8, 1987, for events surrounding isolation of the air supply to the fuel transfer canal inflatable seals and the subsequent loss of fuel pool water. Primarily, the licensee was cited for not following plant procedures which resulted in a delay in identifying the seal failure. Although the event occurred during the last SALP assessment period, all aspects of the event could not be evaluated during that period due to processing of the escalated enforcement action. Violations were identified during this assessment period in the areas of failure to follow procedures (a and f), inadequate procedures (b, g, and h), discrepancies between field configurations and as-built drawings (c), inappropriate bypassing of nuclear instrumentation (d), failure to maintain primary containment integrity (e), and failure to perform caution tag reviews (i). A deviation (j) was also identified for failure to periodically perform diesel generator building ventilation system testing. Violations a, c, d, e, f, and i had the same root cause of inadequate attention to detail. However, licensee efforts to achieve error free operation via enhanced attention to detail are showing some signs of success. During the previous assessment period, seven of eight violations in the operations area were attributed to lack of attention to detail.

Nine violations and one deviation were identified:

a. Severity Level III violation and $50,000 civil penalty involving four examples of failure to follow plant procedures which resulted in the loss of approximately

141,000 gallons of water from the spent fuel pools through the fuel transfer canal seals on December 2-3, 1987 (86-41, 86-43).

NOTE: Although the actual event occurred during the previous SALP assessment period, all aspects of the event could not be evaluated during that period due to processing of the escalated enforcement action.

b. Severity Level IV violation for inadequate operations and surveillance procedures (87-12) (Unit 1).

c. Severity Level IV violation involving discrepancies between field conditions and As-Built drawings in the areas of weld symbols and material thickness on two pipe supports (87-15).

d. Severity Level IV violation for bypassing of average power range monitor scram inputs (88-05) (Unit 1).

e. Severity Level IV violation for failure to maintain primary containment integrity during hydrogen recombiner system testing (88-14) (Unit 2).

f. Severity Level IV violation for failure to control updates to a Unit 2 control room copy of technical specifications (88-15) (Unit 2).

g. Severity Level IV violation for failure to adequately establish and implement diesel generator building ventilation system procedures (88-17).

h. Severity Level IV violation for deficient operating procedures (88-17).

i. Severity Level V violation for failure to perform monthly caution tag reviews (87-26) (Unit 2).

j. Deviation for failure to periodically test diesel generator building ventilation system thermostats and dampers (88-17).

2. Performance Rating

Category: 2

Trend: None

3. Recommendations

Although the licensee's actions and improved performance in the latter part of the SALP period (especially in resolving the INPO findings) are recognized, we are concerned that the number of events caused by personnel errors (i.e., failure to follow procedures, deficient procedures, lack of attention to detail, cognitive personnel errors, and administrative control problems) is high, particularly in the surveillance testing area. We are also concerned that management had not placed emphasis on ensuring that EOPs and control room drawings were readily usable by operators for response to abnormal events since this could represent an attitude that favors emphasis on routine operations. Additionally, management should place high priority on completing the Procedure Upgrade Program which was initiated late in 1985.

No change in the level of NRC staff resources applied to the routine inspection program is recommended.

B. Radiological Controls

1. Analysis

During the assessment period, inspections were performed by the resident and regional inspection staffs. Four radiation protection, one radiological effluent, one environmental, and two chemistry inspections were performed. A confirmatory measurements inspection was also performed using the Region II mobile laboratory.

The licensee's health physics, radwaste, and chemistry staffing levels were appropriate and compared well with other utilities having a facility of similar size. An adequate number of licensee and contract health physics technicians, who met the qualification standards of the American National Standards Institute, were available to support routine and outage operations.

Management's commitment to provide support for and involvement in matters related to radiation protection was noted during the assessment period. The licensee's program for appropriate review, detailed tracking, and final resolution of radiation protection and radwaste issues identified by employee concerns and/or internal audit findings was well documented, managed, and utilized by the licensee. The audits of the radwaste program were conducted by personnel with substantial training and field experience in the areas being audited. In general, internal audits of radiation protection areas at the site were adequate. However, audit weaknesses were noted in the lack of emphasis, thoroughness, and scope necessary to identify technical problems in those areas where NRC violations were identified (i.e., the radioactive waste packaging and transportation areas).

The performance of the health physics staff during routine operations was satisfactory. The licensee's goal of eliminating the need for contract workers for routine health physics activities was achieved during the assessment period. The use of a total in-house health physics staff was expected to standardize the basic training and improve the knowledge and skills of the radiation protection staff. For outage activities, the licensee continued to use contract health physics workers.

Training in the areas of chemistry, radiochemistry, and post-accident sampling (PAS) was considered to be a strength. PAS training was quite comprehensive. Training materials were well done, training aides were good, and documentation was excellent. Chemistry and radwaste personnel were competent, knew their jobs well, and performed their tasks in a exemplary manner.

The licensee's general employee training (GET) was well defined and applied to all staff members. During the assessment period, the licensee committed to further improvements in GET, including increased emphasis on radiation control and use of protective clothing.

Management's involvement in radiation protection activities during the Unit 2 outage was adequate. Health physics management's involvement in outage preparation was sufficiently early to allow proper input and adequate planning of scheduled work. The licensee's use of temporary shielding to reduce external exposure and engineering controls to limit concentrations of airborne radioactive materials were effective in minimizing external and internal exposures of personnel to radioactive materials. In addition, management promptly addressed and resolved unexpected radiological problems which resulted early in the Unit 2 outage when airborne radioactive concentration in selected plant areas unexpectedly exceeded the maximum permissible concentration (MPC) limits listed in 10 CFR Part 20 by several orders of magnitude as a result of leakage through back seated valves in the reactor coolant system. The licensee terminated all but essential outage activities, thereby minimizing personnel exposure to airborne radioactivity until concentrations were reduced to below 25 percent MPC. As a result of licensee actions, minimal personnel exposures resulted from the high concentrations of airborne radioactivity.

Weaknesses were noted in resolution of technical radiation protection issues and in the health physics staff's attention to detail. During an NRC review of a personal contamination event, a violation (b) concerning inadequate air sampling for personnel working in the hot machine shop was identified. Prior to the NRC review, the licensee reviewed and documented the issue;

however, the licensee's evaluation failed to identify the air sampling problem. The NRC also identified problems with persons wearing self-reading pocket dosimeters under protective clothing, thus effectively preventing their intended use during outage work. In addition, the licensee failed to properly evaluate the adequacy of thermoluminescent dosimeter (TLD) placement prior to changing from finger ring to wrist-mounted TLDs for use in extremity monitoring of personnel. This failure was also an INPO evaluation finding.

A lack of timeliness for management responses to recurring in-plant and industry radiation protection issues was noted during the assessment period. The licensee continued to encounter numerous instances of noble gas decay product contamination on clothing of personnel in selected areas of the radiation control area (RCA) during the assessment period. This noble gas contamination issue was detailed in the previous assessment period and resulted in NRC concerns regarding adequate monitoring of personnel leaving the RCA. Not until the end of the present assessment period did the licensee develop detailed guidance to monitor for and, if necessary, assess noble gas decay product contamination. In addition, although the licensee recognized the need for establishing and documenting a "hot particle" monitoring program throughout the assessment period, the hot particle program had not been fully documented prior to the January 1988 outage.

The licensee's program for transportation of radioactive material was generally adequate. However, poor communication between plant and corporate functional groups resulted in a Severity Level III violation (a) when Department of Transportation (DOT) radiation limits on a package were exceeded. The corporate health physics group failed to ensure that changes to DOT regulations were incorporated into facility operations. In addition, a violation (c) concerning special nuclear material control and accountability resulted from misunderstanding of responsibilities among onsite functional groups.

At the end of the previous assessment period, approximately 25 percent of the RCA was maintained as contaminated. The licensee aggressively reduced the contaminated areas within the RCA, and as of December 31, 1987, approximately 4.2 percent of the RCA (excluding the drywell) was maintained as a contaminated area. Further decontamination was not considered practical without the expenditure of unnecessary radiation dose. The area contaminated is less than most other Region II facilities.

Between 1986 and 1987, the number of personnel contaminations decreased from 1867 to 588. Of these events, skin contamination was listed for 498 instances during 1986 relative to 189 events detailed for 1987. Although the number of personnel contaminations received at this facility in 1987 was sharply reduced, the number is still greater than the number received at most other Region II facilities. During the assessment period, the NRC noted that the failure of the plant to aggressively correct leaks from contaminated systems may be contributing to the number of personnel contaminations.

In 1987, the licensee's collective radiation dose was 408 person-rem per unit as measured by TLD. This value was below the national average of 521 person-rem per unit observed at similar Boiling Water Reactor (BWR) facilities. A goal of 260 person-rem per unit was established for 1988, with approximately 100 person-rem expended during January 1988. Of the 100 person-rem expended, approximately 80 person-rem were expended in the initial 16 days of the planned 65-day Unit 2 outage.

Radioactive effluents, both liquid and gaseous, were well below national average for BWR plants of over 500MW capacity. Liquid and gaseous radwaste management functions were operating effectively and smoothly with staff from operators to managers working well together and doing a competent job. While Hatch Unit 2 experienced a number of defective fuel elements in 1987, releases were maintained at normal operating levels by good management practices. Calculated doses in the environment were less than technical specification limits and less than the As Low as Reasonably Achievable (ALARA) design objective of 10 CFR Part 50, Appendix I. A summary of the liquid and gaseous effluents released from plant Hatch and a summary for National Operating BWRs greater than 500 megawatts electric can be found in Section V.L of this report.

During 1987, the volume of solid radioactive waste shipped by the licensee totaled 27,500 cubic feet containing 1,106 curies of activity. This volume represents a decrease relative to 1986 when the licensee made 117 solid radioactive waste shipments totalling 48,184 cubic feet containing a total of 882 curies of activity. The total volume of solid waste disposed of in 1987 was comparable to other BWRs in Region II.

Records and logs of radiochemical determinations were complete, legible, and accurate with no blanks or mistakes observed.

Plant Hatch recently completed installation of state-of-the-art, high purity, germanium detectors in the plant counting laboratory. Hatch maintains an excellent cross-check program with the Environmental Protection Agency and with an outside

vendor and is planning to implement cross-checks with Plant Vogtle. Review of cross-check records indicated an excellent rate of agreement in all radiochemical analysis areas.

NRC recently supplied Plant Hatch with a number of "blind" non-radiological chemistry samples prepared by Brookhaven National Laboratory. The Hatch analyses were in agreement with known values in 20 out of 24 analyses. One sodium result barely showed disagreement (eight percent low); however, all three silica results were low by 13 to 23 percent which statistically shows disagreement. Errors in the 1000 to 1 dilution could have been a probable cause for the disagreement since all silica results were low.

Although the licensee's Operational Upgrade Program identified upgrade items as a result of the INPO evaluation, the overall elements of the licensee's chemistry control program which were inspected by the NRC had improved during this SALP period. Management changes resulted in a more clear definition of the role of chemistry in relation to health physics. Increased stability within the chemistry organization provided increased opportunities for training. Additional resources (such as laboratory space; on-line instrumentation; and state-of-the-art, bench-top, analytical instrumentation) were acquired to increase the chemistry staff's capability. Considerable resources were also being devoted to the design and construction of systems required to implement hydrogen water chemistry (HWC) control of the reactor coolant to reduce intergranular stress corrosion cracking in the reactor water recirculating piping. However, pre-implementation tests had shown that HWC control would be adversely impacted by the presence of copper species in the reactor water. This copper problem has been addressed for several years; however, the licensee has not been able to prevent copper from being transported from the brass condenser tubes into the reactor.

A Quality Verification Function Inspection and an Operational Performance Assessment conducted during this SALP period also resulted in some radiation control observations regarding minor health physics deficiencies. No violations were issued in this area as a result of these two inspections.

Five violations were identified in the radiation control area:

a. Severity Level III violation for failure to comply with regulations applicable to the transportation of licensed material (87-13).

b. Severity Level IV violation for failure to take suitable measurements to detect and evaluate airborne radioactivity hazards (87-27).

c. Severity Level IV violation for failure to control and account for special nuclear material (87-27).

d. Severity Level IV violation for failure to comply with a disposal site license condition (87-27).

e. Severity Level V violation for failure to follow the procedure for control of byproduct material (87-21).

2. Performance Rating

Category: 2

Trend: None

3. Recommendations

While the licensee's efforts to improve several aspects of the Radiation Control Program are recognized, one area which remains a concern is personnel contaminations. Although the number of personnel contaminations received at Hatch in 1987 was sharply reduced, the number is still greater than the number received at most other Region II facilities. Continued management attention should be given in this area.

No change in the level of NRC staff resources applied to the routine inspection program is recommended.

C. Maintenance

1. Analysis

During this assessment period, inspections were performed by resident, regional, and headquarters inspectors.

Several organizational changes were made within the maintenance department to strengthen performance. A new manager of maintenance assumed his duties. The old retrofit organization was moved to the maintenance department. Warehouse activities were moved to the new general support department. The planning and controls function responsible for day-to-day maintenance work order planning was moved to the new outages and planning department. A valve team involving licensee supervision was established to plan and oversee valve repair activities. A 12-hour rotating shift concept was also implemented which has operations, health physics, chemistry, building and grounds, and maintenance personnel on the same shift.

Steps have been taken to improve the quality of maintenance supervision. Each job assigned to contractor personnel now has a licensee representative assigned responsibility for that

activity. Personnel goals and accountabilities have been formally established through the foreman level. Both the upgrade training and qualification program and efforts to improve the quality of supervision are showing results.

The upgrade training and qualification program for maintenance personnel continued to be implemented. All maintenance personnel, including qualified incumbents, are required to complete this program. Training programs in the areas of electrical and mechanical maintenance and instrumentation and control were accredited by INPO. The upgrade training and qualification program is on schedule with an expected completion date for the current staff of December 1989.

In the area of procedures upgrade, the maintenance department has provided ten individuals to support the Procedure Upgrade Program (PUP) effort. Despite this level of support, progress on the program continues to lag behind the licensee's original projections. Technical reviews were completed on all technical specification-related procedures by the end of August 1988. It is anticipated that technical reviews will be completed on all maintenance procedures identified for upgrading by December 1989.

Failure rates for post-maintenance functional tests have decreased from four percent in 1986 to three percent in 1987. The functional test failure rate is projected to be about two percent in 1988. Effective training and improved supervision have reduced the amount of time necessary to perform certain maintenance tasks. Corrective maintenance work orders took an average of 26 man-hours to complete at the beginning of this assessment period. At the end of the assessment period, corrective maintenance work orders took an average of 17 man-hours to complete. The numbers of valves failing local leak rate tests have also decreased. During previous outages, typically 55 to 60 valves failed local leak rate tests. During the most recent outage, 34 valves failed local leak rate tests. The average forced outage rate for both units in 1987 was 2.71 percent; and the median industry forced outage rate for the period July 1, 1986, through June 30, 1987, was 6.6 percent.

A Quality Verification Function Inspection (QVFI) identified problems with post-maintenance testing of Reactor Water Cleanup (RWCU) System isolation valves. One valve failed to close upon receipt of a signal. The corrective action was to backflush the flow transmitter line, but the flow transmitter was not tested prior to being put back into service. Subsequently, the valve failed to operate as required. A violation (c) was issued in this area for failure to perform adequate post-maintenance/modification testing for RWCU system changes.

The licensee's response to industry experience with check valve failures had been identified as a weakness at Plant Hatch in an Inspection Report dated February 10, 1987. Specifically, the inspector noted that procedures were not in place to positively test certain check valves that are normally closed but have safety functions in both the open and closed directions. The Inspection Report highlighted to the licensee that in spite of current ambiguities in the ASME Section XI requirements, industry experience has shown that exercising valves to the open position cannot be relied upon alone to demonstrate the overall operability of dual function check valves.

Further, reviews and analyses had not been conducted at Hatch to identify the cause of some recurring check valve failures or to preclude the failure of check valves that industry experience indicates are likely to occur. Although the plant response to Recommendation 2 of INPO Significant Operating Experience Report (SOER) 86-03, "Check Valve Failure or Degradation," stated that a design review of check valves with recurring degradation would be performed on an as-required basis, these reviews had not been accomplished. Design reviews had not been planned or performed in other systems important to plant safety and reliability which had not yet experienced failures at Hatch, even if industry experience indicates problems are likely.

The following observations were made during the Hatch Operational Performance Assessment conducted on May 9-20, 1988.

- Based on INPO SOER 86-03, "Check Valve Failure or Degradation," the licensee developed a program to address the recommendations in the SOER. One of the recommendations included the performance of a design review for check valves identified in particular systems as identified in the SOER. This SOER was issued in October 1986, but recommendations in the report were not addressed until after the INPO evaluations. This long delay does not indicate aggressive management attention to an important issue within the industry. The licensee currently plans to accomplish this design review by December 1989.

- Of the 59 Licensee Event Reports (LER) issued during 1987 and 1988, 11 had inadequate maintenance either directly or indirectly identified as a contributing factor. Of those LERs which involved maintenance personnel, adequate root cause determinations had been made for the documented deficiencies, and appropriate corrective actions had been specified. In some of the LERs, the root causes were incorrectly specified. Root cause training is being provided to the appropriate maintenance personnel.

- Review of the licensee's trend analysis program, as related to maintenance activities, resulted in the conclusion that the program as presently constituted provides meaningful data on equipment failures and maintenance histories. This data is beginning to be used widely to specify service, surveillance, and testing requirements to minimize repetitive or continuing deficiencies.

- The maintenance work planning process at Hatch adequately provided for the preparation and prioritization of work orders and work packages; the proper interface among planning, operations, and maintenance personnel; the assurance that technical specification and post-maintenance testing requirements were met; and the periodic review of overdue work requests. The work planning process in the maintenance area contained the necessary elements to be well understood by the supervisory personnel involved and to be a strong point of the licensee's maintenance program.

- A significant predictive maintenance program is in place at Hatch. The predictive maintenance program consisted of vibration and oil analysis on rotating equipment, infrared inspection to determine overheating of electrical equipment, and motor-operated valve actuator characterization (MAC) testing of motor-operated valves. The licensee estimated that in the last two years, 20 major equipment failures have been prevented by their predictive analysis program. In addition, the licensee estimated that two days of generation and 15,000 man-hours of maintenance had been saved and approximately 40 safety system outages had been prevented. In addition to the above, a live load valve packing program had been initiated and approximately 175 critical valves had been repacked using this spring load packing technique. Efforts had also been undertaken to improve site performance in the repair of electrical motors which resulted in only two major motor failures during 1987.

- The ratio of predictive/preventive maintenance to corrective maintenance has increased during this SALP period which, coupled with the reduction of outstanding maintenance work orders, indicates that an aggressive attitude toward predictive/preventive maintenance is improving equipment reliability and availability.

- The quality of maintenance work had improved due to management initiatives. Maintenance management had established specific goals for each employee related to safety, quality, and performance. Salary increases and performance ratings were tied to meeting the specific

goals. The goals promoted clear understanding of management's expectations and resulted in improved performance.

- Three maintenance supervisors were utilized by the licensee to screen maintenance work orders (MWO) for completeness and special requirements prior to issuance to the craft for work. This practice eliminated administrative work on the field supervisors and foremen, allowing more time for direct field supervision. Managers, supervisors, and foremen were actively involved in field supervision and control of work activities. Work assignment and scheduling controls were effective. Routine meetings, called "tool box meetings," held between supervisors and craftsmen were used to provide operational experience feedback.

- The experience level of maintenance management, supervisors, and foremen and management's effective communication of responsibilities and goals were noted as strengths in the maintenance area.

- The corrective MWO backlog in 1986 averaged approximately 3335 outstanding MWOs. In 1987, the average number of outstanding MWOs was reduced to 2390, and for the first part of 1988, the average was 1690. The number of MWOs outstanding for over 12 months in 1986 averaged 260. In 1987, the number increased to 285. However, the current average of 183 indicates a significant reduction.

- The licensee has in place a deficiency card (DC) system. This system provides the licensee's staff with a mechanism for reporting deficient conditions. All reported DCs are reviewed by the Shift Supervisor for immediate action or reportability. Further review is performed by members of the Nuclear Safety and Compliance (NSC) department to determine if the deficiency was significant.

- The licensee issued approximately 3700 DCs for Units 1 and 2 in 1987 and approximately 4000 DCs for Units 1 and 2 by the end of April 1988. The marked increase in number appeared to be due to a management decision to write a DC for each MWO. In light of the increased number of DCs being generated, the NSC department is currently examining the deficiency card program, to ensure that the proper level of attention and escalation, where appropriate, is provided to conditions adverse to quality. The thoroughness of the reviews of those DCs associated with LERs issued in 1988 was good.

The longer operating runs during this period are indicative of an improved maintenance program which avoids the necessity of shutdown for repairs. The licensee's effort to modify valves to spring load the packing is particularly noteworthy in the resultant decrease in valve stem leakage. Increased emphasis on predictive and preventive maintenance, with maintenance coverage on all shifts, has resulted in an improved maintenance program.

Management involvement in assuring quality is satisfactory. This was based upon a maintenance philosophy that embodies the same concepts and practices in its Balance of Plant (BOP) program as it does for safety-related systems. A predictive maintenance program has been implemented to assist in reducing trips and a system engineer concept has been developed in the engineering department. Time between equipment problem discovery and the fix being made appears to be shortening. It was also noted that maintenance has changed from a "reactive" mode to a "planned activities" mode. Management has allocated an appropriate share of resources to the BOP systems since this area is responsible for a large number of the plant trips.

One exception to this is in the area of Quality Assurance (QA) for the BOP. In light of the number of BOP-related scrams experienced, the resources devoted to QA activities for BOP problems appears low. There are different systems for the trending of deficiency reports and MWOs. Since all events or problems are not in both systems, inaccurate conclusions can be reached. This contributes to a lack of understanding of the issues. Staffing seems adequate, and the training program for maintenance is good. A significant number of design changes or modifications are also being scheduled which are not NRC initiated, displaying initiative and commitment for improvement on the part of the licensee.

During the evaluation period, one electrical and instrumentation maintenance inspection was performed. The inspection consisted of observation of surveillance activities and review of maintenance procedures and quality records. During the inspection, it was evident that the personnel performing the maintenance were knowledgeable and displayed an interest in performing their assigned tasks properly. Recent changes in maintenance supervision were supported by the plant staff. Management responded to inspector inquiries in a prompt and efficient manner and was cooperative in providing additional information.

In response to the NRC initiative IE Bulletin 85-03, "Motor-Operated Valve Common Mode Failures During Plant Transients Due To Improper Switch Settings," the licensee has requested time extensions in order to complete the bulletin action items. IE Bulletin 85-03 was issued on November 15, 1985, with a

completion date of January 1988. As of this date, the licensee has not submitted a final response to the bulletin and has recently requested an extension for Unit 1 to the fall of 1988. The intermediate responses to the bulletin have been viable and generally sound and thorough.

One area of disagreement has been identified in the area of differential pressure testing valves referenced in IE Bulletin 85-03. The bulletin recommends valves to be demonstrated operable by testing at differential pressure or to provide justification when this testing cannot practicably be performed. Of the 45 Unit 1 and 2 motor-operated valves applicable to the bulletin, the licensee has proposed to differential pressure test only four valves. This does not meet the bulletin guidelines for differential pressure testing. The bulletin will remain open pending justification for not differential pressure testing the remaining applicable valves.

Six violations were identified during this assessment period. These violations were not repetitive or indicative of a programmatic breakdown, and the corrective actions were prompt and effective.

a. Severity Level IV violation for failure to follow equipment clearance procedures (87-12) (Unit 1).

b. Severity Level IV violation for an inadequate maintenance procedure (87-19) (Unit 1).

c. Severity Level IV violation for failure to perform adequate post-maintenance/modification testing for RWCU system changes (87-31).

d. Severity Level IV violation for an inadequate maintenance work order for vacuum breaker maintenance (88-05) (Unit 1).

e. Severity Level IV violation for backfilling an instrument reference leg without specific work instructions or procedures (88-14) (Unit 1).

f. Severity Level IV violation for failure to meet environmental qualifications for orientation of ASCO solenoid valves for the control of the suction valves for the Unit 1 standby gas treatment systems (88-15).

2. Performance Rating

Category: 2

Trend: None

3. Recommendations

Improvement in this area is noted; however, additional improvements are still needed in areas such as reactor scrams, response to industry problems with check valves, and recurring system failures. Because there were recurring events and events for which the root cause could not conclusively be determined, the licensee should continue to place management attention on the programs for root cause analysis of both hardware and procedure problems and for the expeditious completion of corrective actions.

No change in the level of NRC staff resources applied to the routine inspection program is recommended.

D. Surveillance

1. Analysis

During this assessment period, inspections were performed by resident, regional, and headquarters staffs.

The licensee has continued to upgrade surveillance procedures as part of the Procedure Upgrade Program (PUP). Approximately 480 technical specification surveillance procedures were identified for the PUP process. At the close of this assessment period, 220 of these procedures had been validated and are in place. An additional 91 procedures were ready for validation by operations. The licensee completed development of upgraded technical specification surveillance procedures through the technical review stage in August 1988. Noteworthy efforts have been made to ensure that the surveillance procedures meet both the intent and literal requirements of the technical specifications. The licensee has used support from General Electric Company and the corporate technical staff to ensure the technical adequacy of the procedures. Altnough upgrading of the surveillance procedures will be completed approximately eight months later than originally scheduled, the licensee's approach to this effort has been technically sound and conservative.

A comparison of Licensee Event Reports (LER) from the previous SALP period to this SALP period showed an overall reduction in the number of LERs related to surveillance. During the previous period, eleven LERs were submitted for inadequate procedures that caused missed surveillances. Seven LERs were submitted for such procedures during this period. In the cases of six of these seven LERs, deficient procedures were identified as the cause by the licensee during PUP reviews. Two LERs were submitted for missed surveillances due to personnel errors. The computer data base control of surveillance performance continues

to be a strength of the surveillance program. However, instances of missed surveillance due to personnel error still occur.

An inspector reviewed the results of surveillance testing in the areas of main steam isolation valve leak rate testing, closure timing, and main steam safety valve set point testing. Assurance of quality, including management involvement and control, was evident in that policies are adequately stated and understood. Procedures were clear and easy to follow. Some discrepancies involving procedure compliance were noted but did not affect the procedure results. The procedures were in compliance with applicable code requirements. In the area of safety relief valve testing, the licensee's approach to this issue from a safety standpoint demonstrates a clear understanding of the issues involved. The licensee has taken positive action to prevent safety relief valve failures to lift or reseat as previously experienced in the industry. Corrective action taken by the licensee in this area includes refurbishing the valves each refueling outage and experimenting with different valve disk and seating materials.

The following observation was made during the Hatch Operational Performance Assessment conducted on May 9-20, 1988. During surveillance testing, the presence of the System Engineer led to early identification and resolution of problems. The practice of using System Engineers to support plant operations was noted as a strength.

The following four violations were identified. These violations were not indicative of a programmatic breakdown, and corrective actions were timely and effective. However, two examples were provided with violation (b), and both examples indicated a lack of attention to detail by instrumentation and control personnel.

a. Severity Level IV violation for inadequate average power range monitor surveillance (88-07).

b. Severity Level IV violation for failure to follow surveillance procedures (88-07).

c. Severity Level V violation for failure to have written procedures to cover inspection of mechanical snubbers after a severe dynamic event (87-14).

d. Severity Level V violation for failure to revise a main control room environmental control system surveillance procedure (87-23) (Unit 2).

2. Performance Rating

Category: 2

Trend: None

3. Recommendations

No change in the level of NRC staff resources applied to the routine inspection program is recommended.

E. Fire Protection

1. Analysis

Inspections were conducted by the resident and regional inspector staffs of the licensee's fire protection and fire prevention program which is required to be maintained and implemented by the new fire protection license condition. The inspection effort included followup on previously identified enforcement matters.

During the assessment period, the Fire Protection Program at Plant Hatch has been restructured. The restructuring was in response to NRC Generic Letter 86-10, "Implementation of Fire Protection Requirements," which requested that licensees incorporate their approved Fire Protection Program into the Final Safety Analysis Report and then eliminate the fire protection requirements from technical specifications by requesting the standard license condition outlined in the Generic Letter. Georgia Power Company completed this effort in 1986, and the changes were implemented by Amendment 133 to the Unit 1 operating license and Amendment 70 to the Unit 2 operating license by letter dated November 24, 1986. Since the license conditions were granted, the plant fire protection administrative procedures, surveillance procedures, and fire brigade training program have been revised as part of an upgrade to meet the requirements of the Fire Protection Program outlined in the Hatch Fire Hazards Analysis.

The licensee's procedures for the administrative control of the Fire Protection Program meet the NRC requirements and guidelines except for procedural inadequacies which resulted in failures to implement the documentation and records management provisions of the Fire Protection Program to maintain and control fire drill critique reports and fire protection Halon suppression equipment surveillance records. The first example was identified as a violation (a), and the second example was identified as a portion of a separate violation (c). During this assessment period, this was noted as a similar problem within the Engineering Fire Protection Group. In addition, as a

direct result of the Engineering Fire Protection Group's failure to properly document fire brigade drills, four unsatisfactory drills were not repeated within 30 days as required by plant procedures. This was identified as a violation (b).

The NRC inspections reviewed the licensee's implementation of the fire protection and administrative controls. General housekeeping and control of combustible and flammable materials were satisfactory.

The fire protection extinguishing systems, detection systems, fire barriers, and fire barrier penetrations were found to be in service or the appropriate limiting condition for operational requirements of Appendix B of the plant's Fire Hazards Analysis had been implemented. Surveillance inspections and tests and maintenance of the fire protection systems and features were satisfactory, except the 62-day surveillance of the Remote Shutdown Panel Halon Suppression System was not conducted in September 1987. This was identified as a violation (c).

The organization and staffing of the fire brigade met the NRC guidelines. However, the performance of the fire brigade in two drills witnessed by the staff was not of the quality expected. In addition, comments on fire brigade critique forms for two drills conducted in 1987 which were not witnessed by the staff also indicated the brigade performance was unsatisfactory. A negative trend exists in the quality of fire brigade performance which showed only minimal improvement at the end of the SALP period.

Major deficiencies were noted in brigade performance in drills witnessed by the staff. These deficiencies resulted from failure of the Fire Brigade Leader to provide adequate fire brigade guidance. The licensee began implementation of an improved training program for Fire Brigade Leaders towards the end of the SALP period. This training program is adequate to provide minimum qualifications for Fire Brigade Leaders; however, the staff noted that the training program presently does not include specific equipment protection information related to the plant safe shutdown Appendix R exemptions. The addition of such information could improve the quality of the Fire Brigade Leader training program. Other portions of the fire brigade training program met NRC guidelines, and the training was conducted within the frequencies required by plant procedures.

The Hatch Operational Performance Assessment conducted on May 9-20, 1988, noted the following observations:

- The Unit 2 Shift Supervisor acts as Fire Brigade Leader during a fire, provided he is a qualified fire brigade member. If not qualified, he will be replaced by the

on-shift Shift Supervisor that is qualified. Although technical specifications permit the Shift Supervisor to leave the control room to lead the fire brigade, it does not appear to be prudent to remove the Shift Supervisor from the control room when he might be needed as a consequence of the fire. The licensee plans in the near future to qualify the Shift Foremen as Fire Brigade Leaders and remove the Shift Supervisors from that duty. This change would require changes to the fire hazards analysis.

- An in-house Quality Assurance audit (87-FP-1) was conducted on September 2, 1987. This audit identified the problem that new Fire Brigade Leaders were appointed prior to receiving their leadership training. Corrective action was taken by the licensee. Additionally, a list of qualified Fire Brigade Leaders or fire brigade members was not available to all personnel.

- The informal methods used to control the roster of qualified Fire Brigade Leaders and members and the imprecise administrative instruction controlling training was considered a weakness.

The annual fire protection/prevention audit, the 24-month Quality Assurance Fire Protection Program audit by offsite organizations, and the triennial audit by an outside fire protection organization required by the technical specifications were reviewed. These audits were conducted within the specified frequency and covered all of the essential elements of the Fire Protection Program. The licensee had either evaluated possible corrective actions associated with the audit findings or a scheduled date for completion of corrective actions had been established.

Management support and involvement in matters related to fire protection is perceived as declining over the assessment period as evidenced by following:

- Management failed to properly control fire protection activities conducted by the site Fire Protection Engineering Group. Two similar violations resulted from this group's failure to properly complete and document fire protection activities. Early in the SALP period this group failed to properly complete documentation associated with the critique of Fire Brigade Drills, and late in the SALP period this group also failed to perform and document a required fire protection surveillance. In addition, although complete, surveillance documentation for one test prepared by this group also was not transmitted to Document Control for permanent retention.

- Management failed to recognize that the quality of fire brigade performance was not satisfactory. This is evident based on management's failure to perform a timely evaluation of brigade performance during site fire brigade drills early in the SALP period and on the continued deficiencies noted in fire brigade drills witnessed by the staff late in the SALP period.

The licensee has completed all modifications for compliance with Appendix R. Details of the Fire Protection Program have been removed from the technical specifications and are now included in a special program document which was approved early in this SALP period.

Three violations were identified during this assessment period. It should be noted that all have been resolved except the final violation (c) which remains open pending the licensee's response and NRC verification of the licensee's corrective actions.

a. Severity Level IV violation for failure to implement Fire Protection Program procedures for documentation of fire protection activities (87-30).

b. Severity Level IV violation for failure to repeat unsatisfactory fire brigade drills (87-30).

c. Severity Level IV violation for failure to conduct and document required surveillance of the Remote Shutdown Panel Halon System (88-21).

2. Performance Rating

Category: 2

Trend: None

3. Recommendations

The decline in performance from the last SALP period was primarily due to deficiencies identified during fire brigade training and drill activities. We are concerned that management attention to fire protection activities may have declined as a result of the removal of Fire Protection Program details from the technical specifications. This action should not be construed as a reduction in significance, and management attention in this area should not be de-emphasized.

A return to the normal level of NRC staff resources applied to the routine inspection program is recommended.

F. Emergency Preparedness

1. Analysis

During the assessment period, inspections were performed by resident and regional inspection staffs. These included an Emergency Response Facility (ERF) appraisal and an annual emergency preparedness inspection. One revision to the Hatch Radiological Emergency Plan (REP) was also reviewed.

The emergency preparedness inspection and the ERF appraisal disclosed that the licensee maintained the basic elements needed to promptly identify, correctly classify, and implement the key elements of the REP and respective procedures in response to emergency events. Limited observation of portions of the annual emergency exercise conducted in December 1987 showed that the emergency plan could be effectively implemented. The licensee identified, through its observations, areas where improvements could be made and will track corrective actions for these items to completion. The effectiveness of emergency response facilities required to support the emergency response organization were also evaluated during the exercise by a specialist team. The results of the ERF appraisal were acceptable as noted below.

During the appraisal and emergency exercise, inspectors observed that the licensee maintained an offsite dose assessment system that included computerized dose evaluations for both elevated and ground-level releases. Although the dose assessment model satisfied the basic regulatory requirements and was appropriate for initial assessments performed in the control room, it had limitations as a primary model for use in the protective measures decision-making process. The licensee agreed to evaluate the applicability of advances in more "state-of-the-art" methods. Meteorological and source term data were manually entered into the dose assessment procedure. During the appraisal, it was noted that the manual estimation of meteorological data from the control room strip charts was subject to error and bias. The licensee agreed to evaluate whether or not a more reliable and less subjective procedure was necessary to ensure meteorological data was being compiled and computed in accordance with Regulatory Guide (RG) 1.23.

The licensee uses the Emergency Response Data System (ERDS) for data acquisition and management during an emergency. The Safety Parameter Display System (SPDS) and Emergency Response Facility Display System (ERFDS) are components of ERDS. Units 1 and 2 share a common ERDS console in the Technical Support Center (TSC). The data available satisfied RG 1.97 variable requirements as indicated by the Safety Evaluation Report (SER) from the NRC on July 30, 1985.

The TSC is located in the Service Building annex, approximately a two-minute walk from the main Control Room. All TSC equipment, lighting, and ventilation systems are powered by reliable, redundant, power sources. The TSC is equipped with emergency ventilation (high-efficiency particulate air filters (HEPA) and charcoal) to maintain the area under positive pressure. It was observed during the emergency exercise that frequent low differential pressure (DP) alarms were received. Since the 0.09 inches water guage of DP maintained was satisfactory to pressurize the facility, the licensee agreed to consider lowering the alarm setpoint or improving the facility sealing.

The Emergency Operations Facility (EOF) is located in the East Wing of the Training Center approximately 0.2 miles south of the plant. The EOF ventilation system emergency mode isolates the facility from the outside atmosphere by placing a HEPA filter in the recirculation flow path. This meets the requirements of NUREG-0737 for near-site EOFs. During the appraisal, an apparent HEPA filter bypass flow problem was identified. The licensee agreed to investigate and take necessary corrective action. An alternate EOF was located in the Georgia Power Company District Office in Baxley, GA, approximately 10.1 miles from the site.

The EOF data acquisition system and procedures were almost identical to those in the TSC with the exception of the TSC analog annunciator and mimic panels.

Findings identified during the appraisal and during interviews of emergency response personnel regarding the adequacy of the licensee's emergency program and facilities confirmed that the licensee maintained a capability to effectively respond to radiological emergency events.

The ERF appraisal performed during this assessment period determined that the facilities met the NRC criteria. The appraisal confirmed that the emergency response facilities and the equipment provided the required support to the emergency response organization in the event of a radiological emergency. The licensee's response to ERF appraisal findings demonstrated their willingness to improve their program to keep pace with advances in emergency preparedness.

Revision 8 to the Hatch REP was submitted for review. NRC review confirms that changes incorporated as Revision 8 meet the planning standards of 10 CFR 50.47(b) and Appendix E to 10 CFR Part 50.

Walk-throughs with selected Shift Supervisors during the emergency inspection disclosed that licensee staff demonstrated the capability to promptly identify and correctly classify emergency events consistent with the current REP and implementing procedures. The Shift Supervisors were cognizant of their authorities and responsibilities regarding accident assessment and protective action decision-making including onsite protective measures and recommendations appropriate to offsite protection.

Additionally, evaluation of the licensee's emergency preparedness program disclosed that the following emergency planning elements were adequate: notification and communications, public information, and quality assurance audits. Shift staffing levels and functional capabilities of all shifts were acceptable but the availability of augmentation personnel for the onsite emergency organization was uncertain because such availability had not been tested by announced or unannounced drills. The dose calculation method was acceptable for an initial assessment; however, no documentation was available to demonstrate that the licensee had compared the dose assessment model with either the State or the NRC. Although not a regulatory requirement, comparing model results so that all parties understand differences between the results is a recognized good practice and could be crucial in the event of a real radiological emergency.

Three violations were identified during an emergency preparedness inspection. The first two violations (a and b) involved the licensee's failure to implement technical specification procedural requirements in two areas: (1) annual requalification training of emergency response organization personnel consistent with the REP and respective implementing procedures and (2) update, review, and documentation of changes to the emergency preparedness plan regarding the plant itself and Letters of Agreement. The third violation (c) involved the licensee's failure to submit changes to the Emergency Plan Implementing Procedures within 30 days following the change approval. The procedure change was actually submitted within 59 days. The licensee committed to take appropriate corrective action for these violations.

Additionally, though not a violation, a lack of attention to detail was noted during this inspection in that the NRC was not included on the distribution list for two other procedure changes, which at the time of discovery were less than 30 days old. When informed of this, the licensee promptly corrected the transmittal list and expedited the NRC distribution.

Three violations were identified during the assessment period.

a. Severity Level IV violation for failure to implement emergency procedure requiring annual requalification training of emergency response organization personnel (87-18).

b. Severity Level V violation for failure to implement emergency procedure requiring documentation of Letters of Agreement to REP prior to deletion of same (87-18).

c. Severity Level V violation for failure to submit change to Emergency Plan Implementing Procedure within 30 days following approval of change (87-18).

2. Performance Rating

Category: 2

Trend: None

3. Recommendations

During the previous SALP period, the rating was influenced by a recognition of continuing improvement in the area. During this period there was a change in onsite personnel with an attendant break in program management continuity. The current program is improving but has yet to achieve the desired level of excellence.

A return to the normal level of NRC staff resources applied to the routine inspection program is recommended.

G. Security and Safeguards

1. Analysis

During the assessment period, five physical security inspections were performed by the regional inspection staff. A Regulatory Effectiveness Review (RER) was conducted at the end of the last reporting period (December 1986) with the RER report being issued during this reporting period.

The licensee has completed a total revision of its Physical Security Plan (PSP). Although the PSP revisions were comprehensive and detailed, additional dialogue and clarification by the licensee were required before acceptance of the plan changes.

The management at Plant Hatch is continuing to work toward upgrading the security program and has taken an active role to identify through self-inspection and Quality Assurance audits possible physical security equipment, personnel, and procedure deficiencies before they become major concerns. There has also been increased corporate involvement in the procurement of more state-of-the-art security equipment as well as expenditure of funds to upgrade security facilities. In a continuing effort to enhance the overall security program, the licensee has improved the reliability of their security computer through hardware and software upgrades. The licensee has also assigned maintenance technicians on a near full-time basis to maintain equipment. Access control to the protected area of the plant has been enhanced by the addition of a new, larger, security access portal. However, construction of the parking facilities at the new access portal is not yet completed; and consequently, the bulk of the employees still use the older, smaller facility. As a result, access control processing remains a concern.

During the RER conducted in December 1986, three Safeguards Program concerns were noted. The security concerns noted by the headquarters RER Team were reviewed by management and evaluated for their safety and security significance. Corrective actions were taken by the licensee.

The security training program is well established and is oriented toward hands-on performance. Recent inspections have found that security training management continues to look for ways to enhance the training program and has recently added a 40-hour training program for the dedicated tactical responders. Another training enhancement was the addition of a firearms range with "pop-up" targets, which has added more realism to the weapons firing.

During the assessment period, one region-based inspection was conducted in the area of Material Control and Accountability at the Plant Hatch site. The licensee has established and implemented an acceptable program for controlling and accounting for special nuclear material (SNM). To further enhance the program, the licensee was in the process of transferring responsibility for SNM control from one group to another. This necessitated the revision of certain procedures to transfer this SNM control to the newly formed Reactor Engineering group.

Security officers were consistently observed to be alert and attentive to their duties.

Two violations were identified during this evaluation period. These violations varied in the area of program applicability and degree of severity, and they are not indicative of a programmatic problem. However, one of these violations was

similar to violations issued during the previous reporting period (i.e., failure to maintain surveillance of a degraded barrier) and indicates a need for more awareness on management's part.

a. Severity Level IV for failure to maintain protected area barrier and failure of the compensatory officer to maintain surveillance of that barrier (88-09).

b. Severity Level IV for failure to maintain the capability to properly assess protected area barrier alarms (88-09).

2. Performance Rating

Category: 2

Trend: None

3. Recommendations

A return to the normal level of NRC staff resources applied to the routine inspection program is recommended.

H. Refueling/Outages

1. Analysis

During this assessment period, both units underwent refueling outages. Resident and region-based inspectors observed refueling operations and outage activities.

Management commitment to improve the management of and scheduling for outages continued during this assessment period. An outages and planning department was formed. This department essentially is divided into two functions, outage management and planning and controls. Each function is headed by a superintendent. Several features of the licensee's outages and planning program are particularly noteworthy. Each outage is managed by an outage director. The outage director is responsible for overall outage planning and management and provides a single point of contact within the licensee's organization. The outage director is assisted by area outage supervisors who are responsible for the planning, coordination of work, and resolution of problems within assigned areas. The licensee's program places particular emphasis on long range planning. Monthly planning meetings are held and a two-year forecast is maintained. A five-year forecast is anticipated by December 1989. The licensee has also developed a formal lessons learned program to refine the outage management and planning process. Over one hundred lessons learned were identified from the most recent Unit 2 outage.

The two refueling outages during this assessment period were both planned and managed by the newly formed outages and planning department. The licensee's efforts have resulted in improved schedule performance and more efficient outages. The most recent Unit 1 outage lasted 65 days, approximately seven days beyond the estimated duration. The previous Unit 1 outage lasted 167 days, about 85 days beyond the estimated duration. The most recent Unit 2 outage lasted 68 days, approximately three days over schedule. The previous Unit 2 outage lasted 84 days, about 30 days over schedule. Improvements have also been observed in interdepartment coordination. Two Operations Supervisors assigned to the outage management function provide liaison with the Operations Department. The licensee also utilizes frequent, well-organized, status meetings during outages to enhance coordination.

Improvement in the management of outages activities can also be seen in Licensee Event Report (LER) submittals. Four LERs were submitted during the most recent Unit 1 outage, whereas 28 LERs were submitted during the previous Unit 1 outage. Five LERs were submitted during the most recent Unit 2 outage, whereas 15 LERs were submitted during the previous Unit 2 outage. Within the outage area, there is consistent evidence of prior planning, the assignment of priorities, decision making at a level that ensures adequate management review, and frequent corporate management involvement.

There were six inspections of outage activities by region-based inspectors. The first involved the in-service test (IST) pump and valve test program and procedures, and the second involved the licensee's activities in response to Generic Letter 84-11. The third and fifth inspections involved activities associated with Bulletins 79-02 and 79-14 and Mark I containment modifications, and the fourth and sixth inspections involved the in-service inspection (ISI) program and procedures. During these inspections, one violation was identified in the area of inspection of pipe supports. It is discussed further in Section IV.C of this report.

The inspectors noted an improving trend in the areas of management awareness and involvement in the ISI/IST and related areas but did not consider performance in these areas to be above average. The only area of inspection that was considered above average was the response to Generic Letter 84-11 involving the Boiling Water Reactor pipecrack inspection effort. Good performance in this area was attributed to the involvement of a very aggressive and technically competent contractor, Southern Company Services (SCS).

Three reactor scrams occurred during startup operations following outages. Unit 1 automatically scrammed on May 20, 1988, due to inadvertent closing of three main steam isolation valves. Unit 2 automatically scrammed on March 18, 1988, due to a deficient turbine control valve surveillance procedure. Additionally, Unit 2 was manually scrammed on March 21, 1988, following a trip of a reactor feed pump. The manual scram was initiated in anticipation of an automatic scram on low reactor vessel water level.

As a result of findings identified during an INPO evaluation in March 1988, the licensee voluntarily shut down both units for approximately 30 days to implement corrective actions. Licensee senior management was involved in ensuring that corrective actions to address the INPO findings were adequate.

One violation was identified during this assessment period. This violation was not considered to be indicative of a program breakdown, and the licensee's corrective actions were prompt and effective.

- Severity Level IV violation for an inadequate turbine control valve surveillance procedure (88-07) (Unit 2).

2. Performance Rating

Category: 2

Trend: Improving

3. Recommendations

During the Unit 2 outage, improvement was noted in outage coordination and reduction in outage-related reportable events.

No change in the level of NRC staff resources applied to the routine inspection program is recommended.

I. Quality Programs and Administrative Controls Affecting Quality

1. Analysis

During the assessment period, inspections were performed by the NRC inspection staff.

For the purposes of this assessment, this area is defined as the ability of the licensee to identify and correct its own problems. It encompasses all plant activities, all plant personnel, as well as those corporate functions and personnel that provide services to the plant. The plant and corporate Quality Assurance (QA) staffs have responsibility for verifying

quality. The rating in this area specifically denotes results for various groups in achieving quality as well as the QA staff in verifying that quality.

A Quality Verification Function Inspection (QVFI) concluded that: the Hatch quality verification organization's performance has been generally effective in the operations and plant modifications area; the staff members involved in these areas are experienced individuals who are capable of conducting in-depth technical verifications; the audits, surveillances, and observations conducted in those areas are performance oriented and have resulted in the identification of significant issues that impact plant reliability and safety; and additionally, management appeared to be effective in ensuring that deficiencies are addressed promptly and completely.

Although the Hatch quality verification organizations were found to be generally effective by the QVFI, the NRC inspection team identified one violation and seven observations of weak performance. These are discussed in the appropriate sections of this report.

The QVFI identified that the only QA auditor that had operations experience was due to leave the QA organization. The lack of QA personnel with operations experience had the potential to weaken QA audits and surveillances in the operations area; however, the licensee was already actively recruiting to fill this position. A Senior Reactor Operator-qualified individual was subsequently transferred to QA, removing this concern.

The QVFI identified that safety-related service water pumps and component parts were stored exposed to the elements and in disarray. Consequently, it could not be ascertained if this material had been stored or handled in a way that was appropriate to the requirements of its safety-related status. Prior to the end of the inspection, concerns related to this area were resolved.

The QVFI identified that QA audits and surveillances were of adequate technical depth and generally performance oriented, identifying real problems as well as procedural discrepancies. QA personnel were knowledgeable and professional.

The licensee has taken steps to enhance the effectiveness of the Quality Control (QC) function. Three supervisor positions have been added under the QC superintendent to improve direct supervision of the inspectors. Inspectors are also being cross trained. For instance, inspectors have participated in the INPO-accredited mechanical and electrical maintenance training programs. Inspectors are now scheduled on a 24-hour per day, 7-day per week basis to facilitate support of inplant activities.

Corrective action programs have generally been effective. For instance, plant personnel are knowledgeable of deficiency card (DC) requirements and routinely submit required reports. The DCs are reviewed by well-qualified individuals who identify items requiring priority responses. The DC system has been effective in capturing seemingly minor events and conditions which collectively are significant. There have been instances, however, in which corrective actions have not been fully effective and/or timely. Weaknesses were identified in the specification and administrative control of post-maintenance testing during the previous assessment period. The licensee developed corrective action plans to address these weaknesses. Additional instances of inadequate post-maintenance testing were identified during this assessment period. More specifically, two containment penetrations were not local leak rate tested following maintenance. The licensee's Procedure Upgrade Program (PUP) was a long-term corrective action intended to correct a wide variety of procedure-related deficiencies. This program was originally scheduled to be completed in December 1987. Program progress has been much slower than anticipated. For example, operations procedures are now scheduled for completion in December 1989.

The following observations were made during the Hatch Operational Performance Assessment conducted on May 9-20, 1988.

- On October 15, 1987, the Site QA Manager issued report 87-PO-2A documenting the results of an audit of plant operations. Included in this report were items relating to the failure to document deviations between the Emergency Procedure Guidelines and Emergency Operating Procedures (EOP), less than optimum professional conduct in the control room, problems with the EOP flowcharts due to the plastic covering and congestion which make the charts difficult to follow, possible excessive administrative work load on the Shift Supervisor, and problems with timely incorporation of As-Built Notices (ABN) on drawings available in the control room. QA did not identify those items as significant, and the corrective actions and further reviews to determine the scope of the problems were protracted. The protracted nature of the corrective actions reflected adversely on management support of plant operations.

- The licensee had recently upgraded control room drawing controls due to concerns identified by INPO. The licensee's old program was accomplished by maintaining control room drawings on aperture cards. The licensee's new program consisted primarily of the establishment of a "blue line" stick drawing file in each control room with

system changes entered as "red lines" on the drawings by site engineering, referencing the appropriate ABN or Work Completion Notice. This new program appeared to function smoothly.

- The Annunciator Response Procedures (ARP) and Abnormal Operating Procedures (AOP) are part of the PUP which started in January 1986. Out of 2000 ARPs and AOPs, approximately 850 had been upgraded. The rest are scheduled for completion in late 1988 or early 1989. Since the EOPs are coupled to the AOPs and ARPs, the AOPs and ARPs should have been completed when the EOPs were completed. The licensee failed to give priority to the completion of the ARPs and AOPs which are coupled to the EOPs.

- The licensee was moving the annunciator response instructions, now located in notebooks behind the operators desk, to individual notebooks placed in clear plastic holders located at each applicable control room panel. This will make the instructions more readily available and easier to locate. This is noted as a positive initiative.

- During the field observations of maintenance activities, it was noted that QC inspectors reviewed all materials used in maintenance activities. This practice was considered to be a strength and provided independent verification that appropriate materials were utilized for each Maintenance Work Order (MWO). Prior to use, each MWO was reviewed by QC, and QC holdpoints were specified. QC involvement in auditing documentation and field implementation of maintenance activities was evident.

- An Independent Safety Engineering Group (ISEG) was established for the plant in April 1986. The ISEG reports to the Vice President, Plant Hatch. It appeared to have been effective in identifying areas of plant activities where improvement could be made. The ISEG provided an additional level of safety oversight, examining areas of interest to the ISEG as well as conducting special reviews requested by the Plant Manager.

- Since the ISEG is not required by the NRC, its establishment and use at the plant was considered a positive indicator of management interest in improving plant performance.

The NRR Project Manager reviewed the licensee's 10 CFR 50.59 process and found that it is thorough, technically sound, and well documented.

The licensee has provided timely, sound resporses to NRC generic letters, bulletins, and information notices. In addition, the licensee has responded in a timely manner to several informal surveys for plant information. During the report period, the staff processed 43 amendment requests. The safety analyses supporting the requested changes were generally complete and provided the staff with a clear understanding of the changes desired. The licensee's no significant hazards determinations were thorough and required only minor modification. Amendment requests are submitted in a timely fashion, thus allowing sufficient time for the staff to notice the requests with a 30-day comment period.

Based on results of an INPO evaluation, a program was initiated for correcting problems with control room annunciators. Corrective action was taken to address annunciator controls, tracking, and problems encountered. Additionally, operational upgrade efforts have been effective in enhancing operators' ability to respond to transients and to conduct routine plant operations.

A review was performed on all sections of the SALP report in an attempt to further define and evaluate the licensee's ability to find their own problems and take adequate action to prevent recurrence. This review resulted in the following conclusions:

a. The licensee was able to identify and adequately correct problems relating to safety as evidenced by the following actions:

   - Management promptly addressed and resolved unexpected outage radiological problems resulting in minimizing personnel exposure from high concentrations of airborne radioactivity. Additionally, there has been a reduction of contaminated areas within the radiation control area.

   - The deficiency card system has been effective in capturing seemingly minor events which collectively are significant resulting in prompt corrective action efforts.

   - There has been a major effort regarding correction of plant seismic design concerns, with the licensee taking the industry lead for Boiling Water Reactors in the seismic margins program.

   - Effective use of trend analysis for service, surveillance, and testing requirements to minimize repetitive or continuous deficiencies coupled with the new predictive maintenance program, has resulted in improving equipment reliability and availability.

b. The licensee exhibited an inability to either identify or correct (once identified) problems relating to safety in the following areas:

- The Emergency Operating Procedures contained deviations from the Emergency Procedure Guidelines and were deficient from a human factors standpoint. Although these types of deficiencies were identified by the licensee's QA staff in 1987, they were not corrected until identified by INPO and/or the NRC.

- Inadequate root cause analyses and corrective actions taken in response to equipment failures, Licensee Event Reports, and deficiencies resulted in repetitive types of events (i.e. failure of the vital AC inverters, turbine trips, recurring engineering fire protection group deficiencies, degraded security barriers).

- There appeared to be a site-wide lack of attention to detail and procedures as evidenced by the number of violations in operations, surveillance, health physics, and in-service inspection with this as the root cause.

c. Management has exhibited a lack of timeliness in their response to recurrent in-plant and industry radiation protection issues. There were numerous instances of noble gas decay product contamination, and management was slow in developing sufficient guidance in correcting this and the "hot particle" monitoring programs. Procedure Upgrade Program delays have also exacerbated several timeliness concerns.

Two violations were identified during this assessment period. These violations were not considered to be indicative of a program breakdown.

a. Severity Level IV violation for inadequate design of vacuum breaker test solenoid valves (88-11).

b. Severity Level V violation for failure to establish procedures to verify the hydrogen recombiner trouble alarm setpoints (86-43).

2. Performance Rating

Category: 2

Trend: None

3. Recommendations

No change in the level of NRC staff resources applied to the routine inspection program is recommended.

J. Licensing Activities

1. Analysis

The licensee's management has demonstrated an active interest in maintaining control of and assuring the quality of licensing issues. On a monthly basis, the licensee has provided a listing of the most critical licensing issues for which the licensee desires early resolution. The licensee also has promoted quarterly meetings to discuss plant status and the need for licensing actions. These meetings have been attended by management personnel who are knowledgeable of the issues and supportive of actions necessary to attain early resolution of the issues.

A corporate officer was moved to the plant site shortly before the beginning of this SALP period. His presence onsite has had a positive impact on plant activities including those associated with licensing matters. Senior corporate officers also have evidenced an active interest in licensing matters and have attended meetings where their presence was deemed necessary or desirable.

At the site level, managers are knowledgeable of licensing issues affecting their areas of responsibility and take prompt action to provide support to resolve licensing matters in an adequate and timely manner.

The licensee has been notably open and forthright in dealings with the NRC staff. Problem areas are identified and discussed with the NRC staff as necessary to ensure that the staff understands where the problems are and what actions the licensee is taking to resolve them. This open, frank communication by the licensee has helped ensure a smooth working relationship during the report period.

Throughout the period, the licensee's approach to resolution of technical issues has been technically sound and thorough. The licensee has consistently proposed sound and timely resolutions to licensing matters, thus demonstrating a thorough understanding of the technical issues involved. In particular, the licensee has vigorously pursued a program to resolve discrepancies between the technical specifications for Unit 1 and Unit 2, particularly where the differences are not justified by differences in design of the units. In this regard, the licensee is the lead Boiling Water Reactor (BWR)-4 participating

in the Technical Specification Improvement Program. The licensee also is making a major effort to resolve outstanding problems regarding plant seismic design by participation as the lead BWR in the seismic margins program. The licensee has completed action on all NUREG-0737 items, although the staff has not yet completed its review of the Detailed Control Room Design Review. Similarly, only two items still remain open from the Salem Anticipated Transient Without Scram issues (Generic Letter 83-28), and the licensee is actively pursuing resolution of these matters.

The licensee has shown strong engineering and technical support in the area of licensing. The engineering staff on site has immediate access to indepth engineering backup at Southern Company Services and Bechtel when necessary. The licensee is implementing a program of assigning system engineers such that a particular engineer will have primary responsibility for the performance of each important plant system to include maintenance and modifications. This system "ownership" should result in improved system performance and, hence, improved plant performance.

The licensee has maintained open communications with the NRC staff throughout the period. Licensing issues are generally discussed prior to formal submittal, and technical approaches are referred to the technical staff for their opinions in cases where there is any question regarding the resolution of the issue. In no case has the licensee proposed a change that is not technically sound and conservative. In most cases, the licensee has diligently pursued change requests, responding to staff questions promptly and thoroughly and participating in conference calls or meetings if requested. The single exception had to do with alternate gaseous effluent release points from the plant buildings. The licensee did not respond to staff questions regarding this request, and the request has been cancelled.

The Project Manager audited the licensee's handling of 10 CFR 50.59 reviews and concluded that the reviews are well documented, thorough, and are based upon an adequate evaluation of safety issues involved. In this connection, the licensee has conducted training courses for those plant personnel who may become involved in such reviews to assure that these individuals understand the importance of such reviews and the need for thorough documentation.

The licensee has consistently made thorough, timely, technically-sound responses to NRC initiatives, including the responses to various informal surveys conducted during the report period. Responses to generic letters and bulletins have, in all cases, met the established deadlines, although, in a

number of instances, the licensee has deferred to the generic resolution being developed by the BWR Owners Group (BWROG) for final plant specific resolution. In such cases, the licensee has advised the staff that its ultimate response would follow the BWROG guidelines. Responsiveness by the licensee was instrumental in assisting the staff to complete a large number (i.e., 88) of licensing actions during the report period, thereby reducing the licensing backlog. During the report period, the licensee also has responded to a number of NRC solicitations for public comment on proposed rule changes or additions. In each such instance, the licensee's comments have been timely and well taken.

In the area of licensing, staffing appears to be adequate. Enough personnel are engaged in licensing at the plant and in the corporate office to ensure adequate support for licensing activities. Access to the technical support staff is available as necessary. Licensing issues are handled primarily by the corporate staff, although the plant licensing group is involved in technical specification amendment requests. Such requests generally are initiated at the plant level, reviewed at the corporate level for adequacy, rechecked by the plant if significant changes are made, and then transmitted over the signature of a corporate officer. In no case during the report period has the staff returned an amendment request to the licensee due to insufficient supporting information. In the few cases where the staff determined that additional information was required, the licensee has been able to respond promptly and thoroughly to telephone calls or in meetings, as requested by the staff, or to formal written questions.

2. Performance Rating

Category: 1

Trend: None

3. Recommendations

None

K. Training and Qualification Effectiveness

1. Analysis

In general, training has been effectively implemented. All ten training programs have been accredited by INPO. These programs include Senior Reactor Operator (SRO) Training, Reactor Operator (RO) Training, Shift Technical Advisor (STA) Training, Technical Support and Management, Non-licensed Operator Training,

Chemistry, Health Physics, Mechanical Maintenance, Instrumentation and Control, and Electrical Maintenance.

Training in the areas of chemistry, radiochemistry, and post-accident sampling (PAS) were considered to be a strength. PAS training was quite comprehensive. Training materials were well done, training aides were good, and documentation was excellent. Chemistry and radwaste personnel were competent, knew their jobs well, and performed their tasks in an exemplary manner.

The licensee's general employee training (GET) was well defined and applied to all staff members. During the assessment period, the licensee committed to further improvements in GET, including increased emphasis on radiation control and use of protective clothing.

In the area of fire protection, the major deficiencies were noted in fire brigade performance in drills witnessed by the staff. These resulted from the failure of the Fire Brigade Leader to provide adequate fire brigade guidance. The licensee began implementation of an improved training program for Fire Brigade Leaders toward the end of the SALP period. This training program is adequate to provide minimum qualifications for Fire Brigade Leaders; however, the staff noted that the training program presently does not include specific equipment protection information related to the plant safe shutdown Appendix R exemptions. The addition of such information could improve the quality of the Fire Brigade Leader training program. Other portions of the fire brigade training program met NRC guidelines, and the training was conducted within the frequencies required by plant procedures.

An evaluation of the licensee's emergency preparedness program disclosed a failure to implement the emergency procedure requiring annual requalification training of emergency response organization personnel. (Refer to violation (a) in Section IV.F.1 of this report.)

The security training program is well established and is oriented toward hands-on performance. Recent inspections have found that security training management continues to look for ways to enhance the training program and have recently added a 40-hour training program for the dedicated tactical responders. Another training enhancement was the addition of a firearms range with pop-up targets, which has added more realism to the weapons firing.

The NRR Project Manager audited the licensee's handling of 10 CFR 50.59 reviews and concluded that the reviews were well documented, thorough, and based upon an adequate evaluation of safety issues involved. In this connection, the licensee has conducted training courses for those plant personnel who may become involved in such reviews to assure that these individuals understand the importance of such reviews and the need for thorough documentation.

The licensee is actively pursuing an educational upgrade program offering opportunities to earn an engineering degree to site personnel who desire to participate. Provisions are also in place for plant engineers to participate in licensed operator training. A plant specific simulator is also available on site and is used extensively in operator training and retraining activities.

During the current SALP assessment period, replacement examinations were given to eight SRO candidates in April 1987. Examination results yielded a 100 percent pass rate for those candidates.

In February 1988, replacement examinations were administered to eleven SRO candidates and three RO candidates. Examination results yielded a 100 percent pass rate for both SRO and RO candidates. No generic weaknesses were noted during the course of this examination.

The written examination in February 1988 included a "pilot" open book Section B (SRO test only) which was well received. All eleven SRO candidates passed this section.

Several observations were made during the Hatch Operational Performance Assessment conducted on May 9-20 1988.

- Operator retraining on Emergency Operating Procedures (EOP) was conducted using simulator drills to improve operator response to transients and to sharpen operator use of the EOPs. This retraining was prompted by INPO finding inadequacies in the operators' responses to casualty drills (ATWS) on the simulator. Subsequent to this training, seven operators (four SROs and three ROs) were still found by the licensee to be deficient in EOP knowledge and skills and were removed from licensed duties. These seven individuals were given additional retraining and after successful evaluation by the licensee were returned to licensed duties. The inability of a number of licensed operators to respond effectively to serious simulated accidents is considered to be a significant weakness in the effectiveness of training and operations feedback to the training program.

- The Training Department is revising simulator guides to include STA learning objectives, which was a recently identified weakness. The licensee set September 1, 1988, as the goal for the completion of these revisions. The licensee has also revised the Simulator Documentation Requirements procedure to require that each licensed STA be evaluated in both the SRO and the STA position at the completion of segment requalification training and on annual simulator examinations.

- At the control room shift turnover meetings, the STA conducts a brief training session on new procedures, procedure revisions, or industry events. Training involving procedure revisions involved highlighting only the changes. This training was a positive addition to the shift turnover meeting.

- The Mechanical, Electrical, and Instrumentation and Control training programs consisted of phases involving generic skills training, specific skills training (specific to the plant), and specialized skills training. Classroom, laboratory, and on-the-job training were included in the course content. Independent verification was included as an item in the skills training. Overall control of the training process was maintained by a Training Review Board made up of senior plant managers, a Training Advisory Committee, and a Certification Review Committee. The licensee is currently putting all apprentices and journeymen through the program. Waivers of specific parts of the program have been allowed for experienced personnel. The licensee's training program for maintenance personnel is considered to be a strength.

An EOP team inspection was performed at the site from May 2-19, 1988. The EOPs contained numerous deviations from the plant-specific technical guidance with inadequate justification available. Inadequacies were also identified with EOP satellite procedures and, from the human factors perspective, the extreme complexity of the EOPs. However, despite the inadequacies, well trained operators were able to effectively use EOPs in the simulator. As evidenced by interviews with operators and training personnel, the EOP team concluded that inadequacies in the Hatch EOPs are being offset by the recent heavy training effort. Additionally, the licensed operator training program now places more emphasis on intensive drill type scenarios and on time-sensitive steps in the EOPs.

2. Performance Rating

Category: 2

Trend: None

3. Recommendations

Although there are elements of strength in the training area, we are concerned that there was a lack of proper emphasis on training to handle non-standard situations. That includes the areas of fire protection and emergency preparedness but most significantly the effective implementation of the EOPs. The difficulties experienced with implementing EOPs at Hatch during this SALP period were addressed in the operations section of this report. However, there is little that the training program does that has a more direct effect on the health and safety of the public than training operators in the use of EOPs and in the proper response to off-normal situations. We encourage you to continue to improve this aspect of your training program.

A return to the normal level of NRC staff resources applied to the routine inspection program is recommended.

V. SUPPORTING DATA AND SUMMARIES

A. Licensee Activities

Unit 1 started the period at power. On April 22, 1987, the unit was shut down for a refueling outage. The outage was completed, and the generator tied to the grid on June 26, 1987. Two ATWS modifications were made during this outage. Enriched boron was added to the standby liquid control system, and an alternate rod insertion system was installed. On June 27, 1987, the unit was manually scrammed to investigate drywell cooler problems. The generator was back on line on June 29, 1987. The reactor was manually scrammed on April 5, 1988, to identify and repair sources of high drywell leakage. The generator was back on line on April 12, 1988. On April 20, 1988, the unit was placed in cold shutdown to facilitate implementation of the licensee's operational upgrade program. The generator was back on line on May 26, 1988. The unit ended the period operating at power.

Unit 2 started the period at power. On May 16, 1987, the licensee decided to limit power to 85 percent due to high offgas activity caused by fuel defects. This operating limit was raised to 90 percent power on May 20, 1987. The unit was manually scrammed on August 15, 1987, to repair main condenser tube leaks. During unit startup activities on August 19, 1987, the reactor was manually scrammed to repair a leak in an instrument line in the drywell. The

generator was back on line on August 22, 1987. On September 30, 1987, the operating power limit was lowered to 85 percent due to high offgas activity. The operating power limit was further lowered to 75 percent on November 24, 1987. On January 13, 1988, the reactor was manually scrammed in preparation for a refueling outage. Two ATWS modifications were made during this outage. Enriched boron was added to the standby liquid control system, and an alternate rod insertion system was installed. The generator was back on line on March 21, 1988 The reactor was manually scrammed due to loss of a reactor feed pump on March 21, 1988. The generator was back on line on March 23, 1988. On April 19, 1988, the reactor was placed in cold shutdown for implementation of the licensee's operational program. The generator was back on line on May 23, 1988. The unit ended the period at power.

INPO conducted an evaluation of Hatch Units 1 and 2 on March 14-25, 1988. Results of the evaluation were presented orally to Georgia Power Company at an exit briefing on April 15, 1988. On April 19, 1988, the NRC was advised by the licensee that it was shutting down both Hatch units pending completion of corrective actions in response to the INPO findings.

B. Inspection Activities

During the assessment period, routine inspections were performed at the Hatch facility by the resident and regional inspection staffs. During 1987, there were 34 inspections performed which included two special inspections: a Balance of Plant team inspection in July covering operational maintenance and surveillance practices and a Quality Verification Function Inspection in December. From January 1, 1988, to June 30, 1988, there were 20 inspections including two special inspections: an Operational Performance Assessment team inspection in May and an Emergency Operating Procedures team inspection in May.

C. Investigation Review

There have been no significant investigations within this SALP assessment period.

D. Escalated Enforcement Actions

1. Non-Civil Penalty Escalated Enforcement Actions

A Notice of Violation containing one Severity Level III violation for failure to comply with regulations applicable to the transportation of licensed material was issued on June 29, 1987 (Inspection Report No. 87-13). An Enforcement Conference was also conducted by telephone on June 17, 1987, to discuss this issue.

On January 13, 1988, an Enforcement Conference was held with the licensee to discuss environmental qualification issues. A Notice of Violation containing two Severity Level IV violations (each with two examples) was then issued on February 25, 1988. The licensee requested reduction of the Severity Level for both violations on March 16, 1988, and this request was denied by NRC letter dated April 28, 1988 (Inspection Report No. 86-35).

2. Civil Penalty Actions

A Notice of Violation and Proposed Imposition of Civil Penalty containing a Severity Level III violation and $50,000 civil penalty was issued on April 8, 1987 (Inspection Report Nos. 86-41 and 86-43). The violation involved four examples of failure to follow plant procedures An Enforcement Conference to discuss this event was also conducted on January 22, 1987. The proposed civil penalty was paid on May 8, 1987. This event resulted in the loss of approximately 141,000 gallons of water from the spent fuel pools through the fuel transfer canal seals on December 2-3, 1987.

NOTE: Although the actual event occurred during the previous SALP assessment period, all aspects of the event could not be evaluated during that period due to processing of the escalated enforcement action.

3. Orders

None.

E. Licensee Conferences Held During Appraisal Period

Date	Purpose
January 7, 1987	Plant status and activities, Bethesda, MD
January 22, 1987	Enforcement Conference to discuss the design and procedural problems associated with the loss of water from the spent fuel pools (86-41, 86-43), Region II, Atlanta, GA
January 27, 1987	Licensee plans and status of licensing activities, Hatch Plant, Baxley, GA
February 3, 1987	Plant Hatch programs and initiatives, Region II, Atlanta, GA
April 6, 1987	SALP Presentation, GPC Corporate Office, Atlanta, GA
May 22, 1987	Licensing Issues, Bethesda, MD

Date (cont'd)	Purpose
June 17, 1987	Enforcement Conference by telephone to discuss a transportation issue (87-13)
June 21, 1987	IE Bulletin 79-14 "Seismic Analysis for As-Built Safety-Related Piping System," Region II, Atlanta, GA
August 6, 1987	Procedure Improvement Program, Region II, Atlanta, GA
September 15, 1987	Licensing issues, GPC Corporate Office, Atlanta, GA
October 1, 1987	Physical Security Plan Amendments, Bethesda, MD
October 21-22, 1987	Inservice Testing Program, Hatch Plant, Baxley, GA
November 5, 1987	Emergency diesel generator issue, Bethesda, MD
January 13, 1988	Enforcement Conference to discuss environmental qualification issues (86-35), Region II, Atlanta, GA
February 5, 1988	Introduction of new Nuclear Training Manager to NRC Region II Operator Licensing personnel, Region II, Atlanta, GA
March 15, 1988	Licensing issues, Region II, Atlanta, GA
April 19, 1988	Management Meeting to discuss INPO findings, Region II, Atlanta, GA
May 9, 1988	Management Meeting to discuss corrective actions to INPO findings, Rockville, MD
May 10, 1988	Seismic Margins Program Meeting, Rockville, MD.
June 8, 1988	Hatch safeguards matter, Rockville, MD
June 14, 1988	Status of SIMS, GL 83-28 responses, Rockville, MD

In addition to the formal meetings, a large number of teleconferences were held during the report period to discuss particular issues of concern to either the staff or the licensee.

F. Confirmation of Action Letters

A Confirmation of Action Letter was issued on May 6, 1988, regarding operational weaknesses found by the Institute of Nuclear Power Operations and Georgia Power Company's operational upgrade program to deal with these weaknesses. This letter confirmed our agreement that Georgia Power Company would meet with the NRC to discuss, in more detail, the status of the upgrade actions prior to initiation of steps preparatory to startup.

G. Discretionary Enforcement Actions

- On October 28, 1987, discretionary enforcement was granted to permit opening of the Unit 2 "C" inboard Main Steam Isolation Valve (MSIV) for a period of 3 hours with reactor power level at or below 75 percent in order to complete quarterly surveillance testing of the remaining MSIVs.

- On December 29, 1987, discretionary enforcement was granted to permit operation of Unit 2 without isolating the Reactor Water Cleanup system in order to prevent undesireable effects on reactor water chemistry.

- On April 26, 1988, discretionary enforcement was granted to permit operation of Unit 2 with one recombiner system inoperable for an additional 72 hours in order to complete the weld examination, pressure test, and functional test after a repair to the system which involved cutting and welding of the suction pipe.

H. Licensee Event Reports and 10 CFR Part 21 Reports

During the assessment period from January 1, 1987, to June 30, 1988, Georgia Power Company submitted 59 reports for Hatch Units 1 and 2 not including updates.

Office of Analysis and Evaluation of Operational Data (AEOD) review for Unit 1 included the following Licensee Event Report (LER) numbers:

87-001 to 87-017
88-001 to 88-011
(88-006 and 009 were not available)

AEOD review for Unit 2 included the following LER numbers:

87-001 to 87-017
88-001 to 88-018

The LER review follows the general instructions and procedures of NUREG-1022. The specific review criteria and AEOD findings follow:

1. Significant Operating Events

   No events at Hatch Units 1 and 2 were identified as significant events by the AEOD screening and review process in the assessment period.

2. Abnormal Occurrence Events

   No events at either Hatch Units 1 or 2 were identified as potential Abnormal Occurrences during this reporting period.

3. AEOD Technical Study Reports

   None of the events at Hatch Units 1 and 2 were considered sufficiently serious to merit an in-depth technical study by AEOD during this assessment period.

4. Preliminary Notifications (PN) Issued During Assessment Period

   Three Preliminary Notifications of Events or Unusual Occurrences were issued for Hatch Units 1 and 2 during the assessment period. These events were:

   - PNO-II-88-21, April 4, 1988; Cold Shutdown Caused by Unidentified Reactor Coolant Leak (Unit 1)
   - PNO-II-88-26, April 19, 1988; Plant Shutdown for Evaluation and Correction of Problems Noted in an INPO Evaluation (Units 1 and 2)
   - PNO-II-88-26B, May 18, 1988; Update on Plant Shutdown, Unit 1 Restarts, Unit 2 Preparing to Restart (Units 1 and 2)

   None of the PNs appeared to be reportable events. PNO-II-88-21 reported a reactor shutdown due to a coolant leak. The leak was less than the Hatch technical specification limit, and the event was not reportable as an LER.

5. Summary

During the assessment period, there were a total of 59 LERs analyzed (26 for Unit 1 and 33 for Unit 2). The distribution of these events by causes, as determined by the NRC staff, was as follows:

Cause	Unit 1 # LERs	Unit 2 # LERs	TOTAL
Component Failure	8	9	17
Design	4	2	6
Construction/Installation/ Fabrication	1	1	2
Other	0	2	2
Personnel			
- Operating activity	2	4	6
- Maintenance activity	2	5	7
- Test/calibration activity	4	8	12
- Other	5	2	7
TOTAL	26	33	59

Note 1: The "Other" category is comprised of LERs where there was a spurious signal or a totally unknown cause.

Note 2: With regard to the area of "Personnel," the NRC considers lack of procedures, inadequate procedures, and erroneous procedures to be classified as personnel error. The Board recognizes that the licensee considers these management deficiencies.

I. Licensing Activities

The basis for the licensing appraisal was the licensee's performance in support of licensing actions that had a significant level of activity during the current rating period. These actions, consisting of amendment requests, exemption requests, code relief requests, responses to generic letters, TMI and Salem ATWS items, and other actions, are listed below:

1. Schedular Extension Granted

A schedular exemption from the requirements of 10 CFR 50.48 in regard to circuit breakers and fuses was granted on January 2, 1987, permitting the licensee to delay installation of certain such components until the end of the first refueling outage (for each unit) commencing after November 30, 1986.

2. Relief Granted

June 22, 1987	Inservice Inspection - buried piping

3. Exemptions Granted

January 16, 1987	Appendix R

4. Orders Issued

None.

5. Emergency Technical Specifications Issued

January 29, 1987	Deleted visual acceptance criterion for safety-related snubbers in Units 1 and 2
January 30, 1987	Allowed restart of Unit 2 with Standby Service Water System inoperable

6. License Amendments Issued

Amendment Number		Description	Date
Unit 1	Unit 2		
134	72	Delete requirements that snubbers be declared inoperable if visible signs of leakage are present	01/29/87
	73	Allow Unit 2 restart with Standby Service Water System inoperable	01/30/87
	74	Dummy load profiles for surveillance testing of station batteries	02/25/87
135		Description of refueling interlock surveillance requirements	03/31/87
136	75	Provide closure time requirements for scram discharge volume vent and drain valves	05/13/87
137		Permit hydrostatic and leak testing with a noncritical reactor core	05/26/87
138		Revise limits on Standby Liquid Control System sodium pentaborate solution	05/28/87

Amendment Number (cont'd)		Description	Date
Unit 1	Unit 2		
139	76	Modify technical specifications related to core physics	06/01/87
140		Delete Technical Specification Table 3.7-4 containment isolation valves and change pressure for testing main steam isolation valves	06/05/87
141	77	Permit operation with only one recirculation loop in operation and implement jet pump surveillance requirements of NUREG/CR-3052	06/10/87
142		Add new technical specification to require analysis for Boron-10 concentration prior to startup from each refueling outage	07/07/87
143	78	Add LCOs, trip setpoints and surveillance requirements for monitors which provide high radiation closure signals to containment purge and vent valves	07/14/87
144	79	Revise high room temperature setpoints for reactor water cleanup system	08/10/87
145	80	Organization changes	08/10/87
	81	Delete surveillance requirement 4.3.7 2.a.2 regarding extraction steam non-return valves	08/20/87
146	82	Revise alarm setpoint for Unit 2 core spray sparger differential pressure and add this revised setpoint to Unit 1	08/24/87
147	83	Modify technical specification related to testing of emergency diesel generators	08/25/87
	84	Delete Section 3.7.0 related to settlement of Class 1 structures	08/31/87
148	85	Allow operating personnel to work 12-hour shifts	11/24/87

Amendment Number (cont'd)		Description	Date
Unit 1	Unit 2		
149	86	Incorporate revised reporting requirements of 50.72 and 50.73	12/01/87
150	87	Modify APLHGR limits and ECCS surveillance requirer .s	12/21/87
	88	Change setpoints for main steam line high radiation scram and isolation to facilitate testing of hydrogen addition water chemistry	01/13/88
151	89	Modify technical specification related to fuel thermal limits and refueling operations	01/22/88
	90	Revise technical specifications related to sodium pentaborate solution in the Standby Liquid Control System	02/03/88
152		Modify definition of surveillance frequency to provide for an 18-month operating cycle	02/16/88
	91	Modify technical specifications to permit hydrostatic and leak testing with a non-critical reactor core	03/12/88
153		Modify technical specifications to require full-stroke testing of MSIVs in accordance with ASME Code Section XI	05/02/88
154	92	Modify technical specifications related to minimum river water level for plant operation	05/12/88
	93	Revise technical specifications to explain that the RWCU high differential flow isolation signal includes a 45-second delay timer	06/09/88

J. Enforcement Activities

Functional Area	No. of Deviations and Violations in Each Severity Level					
	I	II	III	IV	V	D
Plant Operations			1	7	1	1
Radiological Controls			1	3	1	
Maintenance				6		
Surveillance				2	2	
Fire Protection				3		
Emergency Preparedness				1	2	
Security and Safeguards				2		
Refueling/Outages				1		
Quality Programs and Administrative Controls Affecting Quality				1	1	
Licensing Activities						
Training and Qualification Effectiveness						
TOTAL			2	26	7	1

K. Reactor Scrams

Unit 1

Seven automatic scrams occurred during this assessment period. Two manual scrams occurred for reasons other than refueling outages. These manual scrams are described in Section V.A of this report.

- January 1, 1987, the reactor automatically scrammed due to a turbine trip caused by actuation of the main turbine overspeed device.

- January 15, 1987, the reactor automatically scrammed due to a turbine trip caused by actuation of the main generator ground fault detector.

- July 23, 1987, the reactor automatically scrammed due to loss of vital AC power.

- August 3, 1987, the reactor automatically scrammed due to failure of the master feedwater controller.

- February 26, 1988, the reactor automatically scrammed due to a turbine trip caused by actuation of the main generator field ground detection relay.

- April 19, 1988, the reactor automatically scrammed due to a turbine trip caused by actuation of the main turbine thrust bearing wear detector.

- May 20, 1988, the reactor automatically scrammed due to closure of three main steam isolation valves.

Unit 2

Eight automatic scrams occurred during this assessment period. Three manual scrams occurred for reasons other than refueling outages. These manual scrams are described in Section V.A of this report.

- January 26, 1987, the reactor automatically scrammed on main steam isolation valve closure due to failure of a temperature switch.

- April 22, 1987, the reactor automatically scrammed on low reactor vessel water level due to a trip of the 2C condensate pump.

- July 26, 1987, the reactor automatically scrammed on low reactor vessel water level due to a loss of vital AC power.

- August 3, 1987, the reactor automatically scrammed on low reactor vessel water level due to a loss of vital AC power.

- March 18, 1988, the reactor automatically scrammed due to a turbine trip caused by a deficient surveillance procedure.

- April 17, 1988, the reactor automatically scrammed due to a spurious reactor protection system actuation.

- May 27, 1988, the reactor automatically scrammed on low reactor vessel water level due to trips of the condensate booster and feedwater pumps.

- May 29, 1988, the reactor automatically scrammed due to a turbine trip caused by an electrohydraulic control system fluid pressure transient.

L. Hatch Gaseous and Liquid Effluent Release Summary

EFFLUENT RELEASE SUMMARY
for Plant E. I. Hatch
Units 1 and 2

Activity Released (Curies)	1985	1986	1987
1. Gaseous Effluents			
a. Fission and Activation Gases	1.26E+04	1.99E+04	2.11E+04
b. Iodine and Particulates	6.00E-03	2.40E-02	3.54E-01
c. Tritium	2.60E+01	3.34E+01	7.08E+01
2. Liquid Effluents			
a. Fission and Activation Products	7.44E-01	7.90E-01	8.15E-01
b. Tritium	5.74E+01	2.85E+01	2.82E+01

1985 EFFLUENT RELEASE SUMMARY
for National Operating BWRs
Greater Than 500 Megawatts Electric

Activity Released (Curies)	Range	Median	Average
1. Gaseous Effluents			
a. Fission and Activation Gases	8.80E+01--6.45E+04	1.48E+03	9.41E+03
b. Iodines and Particulates	7.53E-04--3.04E+00	3.98E-02	2.75E-02
c. Tritium	N/A*	N/A	N/A
2. Liquid Effluents			
a. Fission and Activation Products	0.00E+00--1.03E [illegible]	9.28E-01	
b. Tritium	0.00E+00--3.93E+[illegible] 0	6.54E+00	

*NA - Data Not Available