ENCLOSURE

INTERIM SALP BOARD REPORT

U. S. NUCLEAR REGULATORY COMMISSION

REGION II

SYSTEMATIC ASSESSMENT OF LICENSEE PERFORMANCE

INSPECTION REPORT NUMBER

50-269, 270, 287/89-01

DUKE POWER COMPANY

OCONEE UNITS 1, 2, AND 3

AUGUST 1,. 1987 - JANUARY 31, 1989

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I. INTRODUCTION

The Systematic Assessment of Licensee Performance (SALP) program is an integrated NRC staff effort to collect available observations and data on a periodic basis and to evaluate licensee performance on the basis of this information. The program is supplemental to normal regulatory processes used to ensure compliance with NRC rules and regulations. It is intended to be sufficiently diagnostic to provide a rational basis for allocation of NRC resources and to provide meaningful feedback to the licensee's management regarding the NRC's assessment of their facility's performance in each functional area.

An NRC SALP Board, composed of the staff members listed below, met on March 20, 1989, to review the observations and data on performance, and to assess licensee performance in accordance with Chapter NRC-0516, "Systematic Assessment of Licensee Performance." The guidance and evaluation criteria are summarized in Section III of this report. The Board's findings and recommendations were forwarded to the NRC Regional Administrator for approval and issuance.

This report is the NRC's assessment of the licensee's safety performance at Oconee Units 1, 2, and 3 for the period August 1, 1987 through January 31, 1989.

The SALP Board for Oconee was composed of:

C. W. Hehl, Deputy Director, Division of Reactor Projects (DRP), Region II (RII) (Chairman)
A. F. Gibson, Director, Division of Reactor Safety, (DRS), RII
J. P. Stohr, Director, Division of Radiation Safety and Safeguards (DRSS), RII
A. R. Herdt, Chief, Reactor Projects Branch 3, DRP, RII
D. B. Matthews, Director, Project Directorate II-3, Office of Nuclear Reactor Regulation (NRR)
P. H. Skinner, Senior Resident Inspector, Oconee, DRP, RII
D. Hood, Project Manager, Project Directorate II-3, NRR

Attendees at SALP Board Meeting:

M. B. Shymlock, Chief, Project Section 3A, DRP, RII
B. R. Bonser, Project Engineer, Project Section 3A, DRP, RII
L. D. Wert, Resident Inspector, Oconee, DRP, RII
S. Ninh, Reactor Engineer, Technical Support Staff, DRP, RII

A. Licensee Activities

During this SALP period, Unit 1 was on line for a total of 460 days with a unit capacity factor of 82.28%, Unit 2 was on line for 476 days with a capacity factor of 81.5%, and Unit 3 was on line for 486 days with a capacity factor of 85.4%. These capacity factors are much better than the plant lifetime factors of approximately 68%. The forced outage rates were 0.34%, 2.62% and 4.28% for Units 1, 2 and 3

respectively. This is much lower than the lifetime average of approximately 12%. The operating history during this assessment period is described below.

Unit 1

Unit 1 began this SALP period at 85% power, limited by high lake water (condenser circulating water) inlet temperature. The Unit reduced power to 80% on August 18, 1987 due to the temperature reading of 79.5 degrees F. On September 2, 1987 the Unit was taken off-line for the end of cycle 10 refueling outage. The Unit returned to service on November 6, 1987 but was taken off-line to conduct turbine generator balancing. The Unit returned to 100% power on November 15, 1987 and remained basically at full power until February 17, 1988, when the Unit reduced power to 61% due to a feedwater pump problem. The feed pump problem was corrected and the Unit returned to full power on February 24 until July 1 when power was reduced to approximately 25% to add oil to the "1B2" reactor coolant pump (RCP). The reactor was returned to full power on July 2, 1988 and then tripped on July 5 due to a false indication of lost feedwater flow. The Unit was restarted on July 6, 1988 and returned to full power on July 8, 1988. On August 30, 1988 the Unit was again removed from service to add oil to "1B2" RCP and returned to service the following day. Full power conditions were attained on September 1, 1988 and remained at this point until the reactor tripped on January 2, 1989, due to an operator error. During the recovery from this trip on January 3, 1989 with the unit at approximately 25%, a fire occurred in the ITA (6900v) switchgear that caused extensive damage forcing the operators to manually trip the reactor and place the plant in a natural circulation condition for a short period of time. At this time the licensee decided to commence the end of cycle (EOC) 11 outage which was previously scheduled for January 27, 1989.

Unit 2

Unit 2 began this reporting period operating at approximately 85% power, limited by high water level due to fouling in the "B" steam generator. The Unit reduced power on August 6 to 71% due to a low oil level in a reactor coolant pump. On August 12, 1987 power was further reduced, oil added to the pump and power level returned to approximately 85% on the following day. The unit remained at 85% power except for changes due primarily to minor equipment problems, until February 3, 1988 when the Unit was shut down for the EOC-9 refueling outage. The outage was completed in early April and the Unit returned to 100% power on April 15, 1988. Since the steam generators were chemically cleaned during the outage, power was no longer limited due to steam generator water levels. On April 17, 1988 the Unit experienced a turbine-generator runback to 44% due to a stator coolant flow instrumentation problem. The Unit power was then decreased to approximately 25% to repair the instrumentation and

returned to 100% power on April 20. The Unit remained at approximately 100% power, with the exception of short periods when the Unit was used to load follow on the grid, until June 6 when it was shut down due to steam generator tube leaks. It was returned to service on July 16 and following resolution of several secondary system problems returned to 100% power on July 29. On August 26 the Unit tripped from 100% power due to a faulty high moisture separator drain tank level signal. This was repaired and the Unit returned to 100% power on August 27 and remained at that power level for the duration of this SALP period.

Unit 3

Unit 3 commenced this reporting period operating at full power until January 3, 1988 when power was reduced due to a steam generator tube leak. The leak stabilized on January 10, 1988 and the unit was returned to full power. On April 2 power was reduced to 88% to conserve the core for the summer load period, but was shut down on April 17 due to steam generator tube leakage. The Unit was returned to power on May 11, 1988 and remained at power until the Unit was shut down to begin the EOC 10 refueling outage on August 10, 1988. The outage was completed on September 23, 1988 but several turbine problems delayed the return to full power. The unit was returned to service and full power conditions on September 26, 1988 until November 14, 1988 when the reactor tripped twice. The cause of the first trip could not be determined, however, the unit was restarted. At about 40%, the second trip occurred but this time the cause was determined to be a faulty relay in the steam generator level circuitry and was corrected. The Unit was restarted and returned to full power on November 16, 1988. On January 11, 1989 the Unit was shut down due to fouling of the reactor building cooling units (RBCU). The RBCUs were cleaned, and retested. Unit 3 returned to service and has remained at full power for the remainder of this SALP period.

B. Direct Inspection and Review Activities

During the assessment period, routine inspections were performed at Oconee by the NRC staff. Special inspections were conducted as follows:

- February 22 - 26, 1988, a special inspection in the areas of Environmental Qualification (EQ) of electrical equipment. It included a review of Duke Power Company's implementation of requirements of 10 CFR 50.49 for Oconee and an inspection of EQ electrical equipment.

- April 25 - May 5, 1988, a special inspection to review the adequacy of Emergency Operation Procedures.

- May 9 - 13 and May 19 - 27, 1988, a quality verification functional inspection (QVFI) was conducted in the areas of operations and surveillance testing, maintenance, and design control.

- July 11 - 29, 1988, a special trial Maintenance Team Inspection (MTI) of the methodology prescribed by NRC temporary instruction TI 2515/97, Maintenance Inspection to evaluate the implementation of the licensee's maintenance program.

- January 4 - 14, 1989, an Augmented Inspection Team investigated the reactor trip on January 2 and the fire on January 3, 1989.

II. SUMMARY OF RESULTS

Overview

Oconee was operated in an overall safe manner during this assessment period. Strengths were observed in the areas of Plant Operations, Radiological Controls and Emergency Preparedness. A decline in performance was identified in the areas of Security and Maintenance and Surveillance. Additional managerial attention is needed to return these areas to their previous performance status.

Operations performance continued to be a strength. The number of automatic trips were reduced well below the industry average and below the goals established by the licensee. Corporate interest and oversight of plant activities was very apparent. Fire protection was adequate. Good progress has been made in plant cleanliness which resulted in a reduction of contaminated areas. Management was frequently observed in various areas of the plant providing oversight of activities and guidance to personnel in those areas. The operator training and experience were excellent.

The Radiological Controls area is considered a strength. The reduction of contaminated areas noted above and the continuing effort to further reduce these areas was noteworthy. The reduction of person-rem by use of mockup training and use of remote devices and other training activities is also noteworthy. A weakness was identified in the extended period of inoperability of several Radiation Indicating Alarms.

The licensee has strong maintenance and surveillance programs. However, over this assessment period, numerous performance problems in maintenance were identified. These performance problems were characterized by inattention to detail, miscommunication, and procedure/personnel errors resulting in violations of NRC requirements. Over the period Oconee station has had good availabililty and few operational problems directly attributable to maintenance.

Surveillance activities have also experienced a decrease in effectiveness. Surveillances were completed on time with only minor problems identified. However, notable problems were identified in the in-service testing of valves. The chemistry program in conjunction with the chemical cleaning of Unit 1 and 2 steam generators and the continued attention being provided to meet the guidelines recommended by the Steam Generators Owners Group has minimized degradation of the steam generator tubes.

Emergency Preparedness activities have been maintained as a strength. The licensees many drills conducted in this area have been beneficial as demonstrated by the utilities actions during several actual conditions that occurred during this assessment period. However, a weakness was noted that involved an incorrect classification of an emergency declaration during the conduct of the annual drill.

The Security area, which historically has been a strong area, experienced a significant number of minor problems during this assessment period. Although no single problem was overly significant, the number of problems identified showed a distinct decrease in the effectiveness of the security effort. Of special note is the continuing problem with the closed circuit television assessment capability attributed to poor design and installation.

Management reacted positively to weaknesses identified in the Engineering/Technical Support area during the previous assessment period. This effort was noted in the assignment of design engineering personal to the site and the restructuring of corporate engineering groups to a site specific function rather than a discipline function as was used in the past. Management activities have resulted in the self-identification of several significant problems notable among these was the HPI system mode requirements previously not addressed correctly by the operations staff. Although progress has been made in this area weaknesses still exist such as those associated with communications and simulator hardware and software. Additional management attention may be needed to achieve the desired results in this area.

With respect to the Safety Assessment/Quality Verification area several aspects of plant performance were assessed. The licensee continues to perform self initiated technical audits and use other sources to improve safety performance. QA, QC and management continue to provide good oversite of all activities. The quality of Licensee Event Reports have improved. Weaknesses were noted in the area of complete follow through of activities. This was exemplified by the lack of thoroughness associated with the HPI "piggyback" mode of operation issue and several issues concerning 10 CFR 50.59 evaluations.

Functional Area	Rating Last Period	Rating This Period
Plant Operations (operations & fire protection)	1/2	1
Radiological Controls	2	1
Maintenance/Surveillance	1/1	2
Emergency Preparedness	1	1
Security	1	2
Engineering/Technical Support (engineering, training & outages)	2	2
Safety Assessment/ Quality Verification (quality programs & licensing)	2/2	2

III. CRITERIA

Licensee performance is assessed in selected functional areas, depending on whether the facility is in a construction or operational phase. Functional areas normally represent areas significant to nuclear safety and the environment. Some functional areas may not be assessed because of little or no licensee activities or lack of meaningful observations. Special areas may be added to highlight significant observations.

The following evaluation criteria were used, as applicable, to assess each functional area:

1. Assurance of quality, including management involvement and control;

2. Approach to the resolution of technical issues from a safety standpoint;

3. Responsiveness to NRC initiatives;

4. Enforcement history;

5. Operational and construction events (including response to, analyses of, reporting of, and corrective actions for);

6. Staffing (including management); and

7. Effectiveness of training and qualification program

However, the NRC is not limited to this criteria and others may have been used where appropriate.

On the basis of the NRC assessment, each functional area evaluated is rated according to three performance categories. The definitions of these performance categories are as follows:

1. Category 1. Licensee management attention and involvement are readily evident and place emphasis on superior performance of nuclear safety or safeguards activities, with the resulting performance substantially exceeding regulatory requirements. Licensee resources are ample and effectively used so that a high level of plant and personnel performance is being achieved. Reduced NRC attention may be appropriate.

2. Category 2. Licensee management attention and involvement in the performance of nuclear safety or safeguards activities are good. The licensee has attained a level of performance above that needed to meet regulatory requirements. Licensee resources are adequate and reasonably allocated so that good plant and personnel performance is being achieved. NRC attention may be maintained at normal levels.

3. Category 3. Licensee management attention to and involvement in the performance of nuclear safety or safeguards activities are not sufficient. The licensee's performance does not significantly exceed that needed to meet minimal regulatory requirements. Licensee resources appear to be strained or not effectively used. NRC attention should be increased above normal levels.

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 and the licensee had not taken meaningful steps to address this pattern.

IV. PERFORMANCE ANALYSIS

A. Plant Operations

1. Analysis

During this assessment period routine inspections and evaluations of plant operations were performed by the resident and regional inspection staffs. A total of five automatic trips occurred during this rating period, two on unit 1, one on unit 2 and two on unit 3. One manual trip was also experienced. Seven automatic trips occurred during the last rating period.

The quality of operations has been maintained at a high level of performance. The number of automatic reactor trips has been reduced below the industry average of 2.1 automatic trips a year and the goal established by the licensee of no more than two trips per unit per year.

Upper level management continues to be extensively involved in all aspects of plant operation. The licensee has taken action to provide senior reactor operator training to most of the superintendents and many senior supervisory personnel. In addition some of the superintendents have rotated positions in order to provide a greater understanding of how each discipline functions to support the overall effort of safe and efficient operation. Management has been observed frequently in the control room and touring the plant areas. Outage management has shown major improvement. Outage time has been reduced to approximately 45 days without any significant reduction in the quantity and quality of work being accomplished. The Shift Engineers, who are licensed senior operators, are very involved in coordination of outage work during backshift and weekends.

The low turnover rate (less than 3%) maintained by the licensee has been instrumental in maintaining a continued high experience level and a high level of competence in the operations staff. Due in part to this low turnover rate, the amount of overtime required of the operators has not been excessive. In addition to the experience in the operations group, senior personnel with operating experience have been placed in various other groups.

Control room demeanor and attentiveness has been good. There have been several instances where operator attention and quick action have prevented a reactor trip due to malfunctioning components. To promote professionalism, the operators, in conjunction with the operators at Catawba and McGuire, have developed a set of operator principles. These are posted in the control rooms and other operations areas and identify their commitment to excellence. Operations staffing level continues to exceed TS requirements for shift crew composition. A high level of attention to details beyond their normal duties on the part of several non-licensed equipment operators (NEO) identified and assisted in resolving several problems. Examples of this were the identification of a problem with the Emergency Power Switching Logic (EPSL) and also identification of a containment isolation valve being mispositioned. Only two instances have been identified where operators have failed to follow their procedures. These primarily occurred during the early part of this assessment period and were attributed to the incorrect use of identifying steps as "not applicable" by the supervisor or an isolated personnel error. Improvement in this area has occurred during this period due to managements attention to this problem and the continued emphasis by management to follow their procedures.

Communications between operations and other groups is acceptable, but there have been several instances where inadequate communications have caused a problem. Examples of this communication problem between operations and the performance group involved a loss of all power on Unit 3 for approximately 15 minutes while in decay heat removal during the last refueling outage. Another communication problem between operations and the instrumentation and electrical group resulted in a runback on Unit 3 as a result of a pulled fuse while troubleshooting the rod drive system. Communications between operations and the General Office Engineering staff resulted in a significant safety concern as discussed in more detail in section G. Improvements have been noted in this area in recent months, but continued management attention should be provided in this area.

An Augmented Inspection Team (AIT) reviewed two incidents that occurred on January 2 and 3, 1989 on Oconee Unit 1. The AIT was established to review the events associated with a reactor trip from 100% power that occurred on January 2 and an explosion and fire in the 6900 volt switchgear that resulted in a manual reactor trip from a low power level and subsequent operation in a natural circulation condition on January 3. The conclusion reached by the AIT was that during the first incident, the operators took appropriate actions to maintain the plant in a safe condition. The AIT determined that during the second event the firefighting techniques and results were adequate, and that the reactor trip that had occurred the previous day did not contribute to the fire and trip on the following day. In addition the team concluded that management was highly involved in both the actions taken during the evolutions and the repairs following the stabilization of the unit. The team identified weaknesses in the training of operators and supervisors in areas associated with use of pressurizer auxiliary spray, the requirements for operation in the Thermal Shock Operating Region, and natural circulation with low decay heat conditions. As a result of these findings, the licensee has taken action to conduct additional training and provide additional guidance in these areas.

An Emergency Operating Procedure (EOP) inspection found that the Oconee Emergency Procedures (EP) and Abnormal Procedures (AP) adequately cover the broad range of emergencies and other significant events required by Regulatory Guide 1.33, Section 6. The team found technical discrepancies in the licensee's procedures for cooldown using the HPI system, boron dilution, loss of condenser circulating water intake canal/dam failure and reactor coolant pump operation. Also inconsistencies in operator interpretation of important terms indicated a need for further operator training in EOP terminology use. The licensee is correcting these inconsistencies.

The plants housekeeping and material condition continued to be acceptable and continued to improve. Although progress has been made in housekeeping, specific areas are frequently identified where debris has accumulated especially following outages. Management is making an effort to correct this problem.

With respect to fire protection, the licensee's fire protection procedural program and implementation of fire prevention administrative controls were found to meet NRC requirements and guidelines. Fire systems required for protection of safety related plant areas were being maintained operable. The staffing of the Safety/Fire Protection Department onsite and in the corporate Design Engineering group was adequate. The onsite group was staffed with two fire protection specialists who have primary responsibility for the implementation of the Fire Protection Program. The entire Safety/Fire Protection staff actively monitored plant activities to assess proper implementation of the program. In addition, a Fire Protection Engineer was also assigned to the site from the corporate Design Engineering office. The overall quality of the staff was a program strength.

Two violations were identified in this area:

a. A Severity Level IV violation for failure to follow procedures which resulted in a loss of low temperature overpressure protection for a total of 8 minutes. (88-28, Unit 3 only)

b. A Severity Level IV violation for an inadequate procedure for testing the Emergency Power Switching Logic causing a complete loss of all AC power to Unit 3. (88-28, Unit 3 only)

2. Performance Rating

Category: 1 Previous Rating: Operations: 1
Fire Protection: 2

3. Recommendations

None

B. Radiological Controls

1. Analysis

Inspections were conducted in the areas of radiation protection, radiological effluents, and confirmatory measurements during this assessment period.

The licensee's health physics (HP) radwaste and chemistry staffing levels compared favorably to other facilities of similar size. Eighty-seven percent of licensee health physics technicians were ANSI/ANS 3.1 qualified, with the remainder to be qualified during the current SALP period. Contract HP technicians have usually been hired to support refueling outages. However, a refueling outage originally scheduled for January 28, 1989, started three weeks earlier without contract technicians. The licensee provided radiation protection efficiently in the interim period by reassigning office personnel to the field. The experience of contract technicians was a program strength since a high percentage of contract HP technicians had previous outage experience at Oconee. The licensee HP staff also had a low turnover rate.

A finding that retraining for contract HP technicians had not been formalized was corrected by changing the HP manual to require retraining for those who had not worked on site in the last twelve months. The site specific HP training course contained elements required for course accreditation.

Management support for the radiation protection program was demonstrated by the installation and operation of Constant Air Monitors, a state-of-the-art whole body counter, an automated laundry monitor for screening of protective clothing, and a new radioactive waste sorting and compacting facility.

The licensee continued to have an aggressive contamination control program. Dedicated decontamination crews maintained approximately ninety-three percent of the radiologically controlled area (RCA) as non-contaminated.

The licensee's approach to resolving HP technical issues was adequate. Problems associated with the plant breathing air systems were identified during an inspection and corrective action included calibration of system pressure gauges, operator intervention upon carbon monoxide monitor failure, as-built drawings for the location of air manifolds and pressure gauges, and provision for direct communication between the control room and HP personnel concerning the breathing air system.

Weaknesses were identified in the licensee program to control personnel exposure to radiation. Violations were identified for workers entering containment without reporting to the HP technician as instructed and for workers entering and exiting high radiation areas without knowledge of area dose rates and without adequate monitoring of self-reading pocket dosimeters. In addition, high radiation area hot spots, greater than 100 millirem per hour at 18 inches, were not labeled after shielding had been installed. Licensee management understood

the issue and committed to take the appropriate and necessary corrective actions.

The licensee established a goal of 1,000 person-rem for 1988 for all three units. During 1988, the licensee's collective dose was 879 person-rem or 293 person-rem per unit as measured by TLD. The low station collective exposure was attributed to efficient ALARA planning during outages and use of robotics in maintenance of steam generators. The dose received in 1988 is the lowest dose since 1975 for the licensee which is usually at or below the national average for PWRs.

Liquid and gaseous effluents for calendar year 1987, and the first half of 1988, were within regulatory limits. Offsite doses did not exceed 10 CFR 50, Appendix I ALARA criteria. Liquid and gaseous effluents for 1985 through the first half of 1988 are summarized in this report (see Section V.I). The licensee reported a total of three abnormal liquid releases and no gaseous releases during July 1987 to June 1988.

Licensee management attention to and involvement in the calibration and operation of process and effluent monitors was not sufficient in that the Low Pressure Service Water radiation monitors (RIA-35) have been inoperable since 1985. Corrective actions to upgrade the entire RIA monitoring system are under development but will not be implemented for approximately three years.

A confirmatory measurements inspection showed agreement between licensee and NRC measurements with the exception of two radionuclides in three counting geometries. The licensee was responsive to NRC initiatives as demonstrated by an agreement to analyze additional spiked samples. The results of these analyses are currently pending. A violation was identified during this inspection for failure to provide an approved procedure for the sampling of the Unit 1 condenser offgas.

Two violations were identified.

a. Severity Level IV violation for failure to identify radiation hot spot locations after shielding had been installed and to instruct personnel in the precautions or procedures to minimize exposure to radiation (89-02).

b. Severity Level IV violation for failure to provide an approved procedure for the sampling of the Unit 1 condenser offgas (88-31).

2. Performance Rating

Category: 1 Previous Rating: 1

3. Recommendations

None

C. Maintenance/Surveillance

1. Analysis

Evaluation of this functional area was based on the results of routine inspections performed by the resident inspectors, routine inspections by regional inspectors, and special inspections in the area of Environmental Qualification (EQ) of Electrical Equipment, a Quality Verification Functional Inspection (QVFI), and a Maintenance Team Inspection (MTI).

Overall the licensee has adopted strong maintenance and surveillance programs. However, over this assessment period, numerous performance problems were identified. These performance problems were characterized by inattention to detail, miscommunication, and procedure/personnel errors resulting in violations of NRC requirements.

Over the period Oconee station has had good availability and few operational problems directly attributable to maintenance. The licensee's management was very supportive of a strong maintenance program. This was exemplified by the presence of the station manager and superintendent during daily outage meetings and other meetings that become necessary during periods of routine operations when meetings are not normally conducted. Management also was observed frequently in the various plant areas watching activities and reviewing the conditions in the areas. Management has established goals to increase their preventive maintenance/corrective maintenance ratio to 70% and reduce their outstanding work requests that are over three months old to less than 450. During the latter portion of this assessment period the plant had nearly achieved their goal, in that the preventive/corrective ratio was about 65% and the work requests greater than three months old numbered about 200 for the site.

The QVFI which included the areas of maintenance and surveillance testing identified a number of minor violations, and found work practices and procedural controls to be acceptable. Also the inspection concluded that based on the low component failure rate and few repetitive failures the licensee's corrective and preventive maintenance programs appeared to be effective.

However, one instance was identified by the resident inspectors where safety-related components had been omitted from the preventive maintenance program. This was a failure to provide proper maintenance for the Reactor Building Cooling Unit (RBCU) drop out plates. When the drop out plates were tested in their as-found condition, the plates would not function as designed. At the end of this SALP period, this issue was still under NRC review for escalated enforcement.

Enforcement in this functional area has increased since the previous assessment period. Thirteen violations in the maintenance and surveillance area were identified this period compared with one violation in the maintenance area and one violation in the surveillance areas during the previous SALP period. Most of the violations during this period have had only minor safety significance.

One of the violations was a failure to follow procedures associated with a freeze seal which thawed allowing a spill of approximately 30,000 gallons of slightly radioactively contaminated water, a small amount of which resulted in an uncontrolled release to the chemical treatment pond and subsequently off-site (Violation a).

A second violation involved a failure to perform an adequate verification to assure work was being performed on the correct component prior to performing maintenance. This resulted in the removal of packing from an instrument valve on an operating unit rather than the shutdown unit. This error resulted in a leak of approximately 40 gpm in the auxiliary building. Although operations personnel did a good job in isolating the leak and maintaining the unit in a safe condition, several persons were contaminated and a spill of approximately 1,000 gallons of contaminated water occurred (Violation b).

Inattention to detail was a major contributing factor in the violations identified during the EQ inspection. This resulted in the failure to fully document essential information in the licensee's EQ files and subsequently in a failure to include the information concerning these specific EQ requirements in the development of some surveillance and maintenance procedures (Violation c, k and l).

A Maintenance Team Inspection (MTI) was conducted in July 1988. A weakness was identified in communication/coordination between the plant maintenance department and the Duke Transmission Division. This was exemplified in a violation involving verification and calibrations in the Instrumentation and Electrical (I&E) maintenance area (Violation h).

During the MTI other weaknesses were identified that related to 10CFR50.59 reviews. One example involved the licensee's failure to perform an adequate 50.59 review for the inoperability of the ground detector prior to startup of Unit 2. This issue is discussed further in the Safety Assessment/Quality Verification section of this SALP report.

The quality of maintenance and surveillance planning at Oconee has been good. This area has been enhanced due to the efforts of the integrated scheduling group and the use of dedicated engineers permanently assigned to this group. Through the efforts of management and this group, the outage periods have been reduced without a reduction in the quantity or quality of work being accomplished. One major activity that was undertaken was an effort to assure all work is completed on a component or system when it is taken out of service (through closer coordination of the various onsite groups) to preclude redundant testing.

Materials control, which includes procurement, receiving activity, and material storage, was good during this assessment period. Violation (m) related to access control of material storage areas and does not impact the quality of material handling and storage.

Because it is a three-unit station and must plan for a minimum of two major refueling outages per year, the station has established a fairly large, stable work force in the area of maintenance. The Oconee site is also the home base for the Southern division of Duke Power Company's Construction and Maintenance Division (CMD), which is an additional resource for trained and qualified maintenance personnel.

The chemistry program is being implemented in a satisfactory manner to meet Technical Specification limits and the guidelines recommended by the Steam Generators Owners Group. The licensee is continuing, through the effectiveness

of plant components and chemistry control, to minimize degradation of the steam generator tubes. Surveillance and preventive maintenance programs have been expanded for the Once-Through-Steam-Generators and the Decay Heat Removal Heat Exchangers in order to identify potential problem areas. The licensee has made improvements in analytical methods with the installation of online ion chromatography analyses systems.

Surveillances continue to be performed with only occasional problems. Surveillances have been performed as required by Technical Specifications. There have been very few instances of missed surveillances during this period.

The QVFI identified that licensee technicians performing a valve stroke timing surveillance test did not recognize that the stroke-time performance did not meet its acceptance criteria. A review of previous testing also identified that the preceding test had not met the acceptance criteria (Violation d).

Another inadequacy with the licensee's surveillance program was stroke time testing was not being performed as specified by ASME Section XI requirements. Section XI of the ASME Boiler and Pressure Vessel Code requires timing to begin at the signal initiation and conclude at the actual closure as opposed to the "light to light" criteria being utilized by the licensee (Violation e). The method in use by the licensee was based on the timing method that had been approved by the NRC for the IST program established at the Catawba Nuclear Station.

Examples of licensee response to surveillance failures in MOVATS testing were identified to be poor in that there was an apparent attitude by some personnel that acceptance criteria for Inservice Test Program (IST) program valves was guidance and not a requirement. Additional examples were identified where corrective actions for failed surveillances were delayed, minimal, or not performed. Other items observed were a failure to verify that all specified acceptance criteria in MOVATS testing was performed (i.e. to verify ease of movement of an actuated valve) and several valves which meet the requirements for IST program valves were not entered into the IST program (violation f).

The thirteen violations listed below represent a significant increase over the previous SALP period. There was one violation in the maintenance area and one violation in the surveillance area during the previous SALP period. Most of the violations during this period have had only minor safety significance.

a. Severity Level IV violation for failure to follow procedure on freeze seal of a line to the BWST resulting in a 30,000

gallon spill of slightly contaminated borated water (87-51).

b. Severity Level IV violation for inadequate procedures to assure the correct component was identified prior to performing work which resulted in a spill of contaminated water due to the work being performed on the incorrect valve and also with a main steam valve that was incorrectly removed from a supply line to the auxiliary feedwater pump turbine (88-08).

c. Severity Level IV violation for inadequately documenting the performance characteristics for the Victoreen High Range Radiation Monitor System (88-03)(EQ).

d. Severity Level IV violation for failure to keep accurate records for PT/2/A/0150/22A, operational valve functional test on May 11, 1988, and nuclear equipment operator fire watch logs on May 19, 1988 (88-13).

e. Severity Level IV violation for failure to routinely measure valve stroke times from actuation signal initiation to the end of the actuation cycle (88-13).

f. Severity Level IV violation for failing to include valves LPSW-773 and HP-98 in the valve inservice testing program (88-13).

g. Severity Level IV violation for failure to follow procedures relative to correctly filling out work requests and for inadequate cleanliness levels in the reactor protection and engineered safeguards cabinets (88-13).

h. Severity Level IV violation for procedural problems related to verification and calibration of control room instrumentation and battery undervoltage alarm relays, circuit breaker maintenance, 4160 volt switchgear, and ground detection circuit alarm set points (88-17).

i. Severity Level IV violation for failure to follow procedures resulting in overpressurization of a safety related pipe section. (88-32, Unit 3 only)

j. Severity Level V violation for failure to follow, in its entirety, the procedure for component verification while performing RPS Channel "B" calibration and functional tests (87-44).

k. Severity Level V violation for the reactor building level transmitter junction box not being maintained completely

filled with oil and, therefore, not in the as tested configuration (88-03)(EQ).

l. Severity Level V for deficient EQ maintenance procedures in that requirements in the Equipment Qualification Reference Index were not properly addressed in the maintenance procedures (88-03)(EQ).

m. Severity Level V violation for failure to maintain access control to storage areas. (87-32, Unit 3 only)

2. Performance Rating

Category: 2 Previous Rating: Surveillance 1
Maintenance 1

3. Recommendations

Increased management attention is warranted in this area due to the reduced attention to detail and increase in personnel and procedural errors.

D. Emergency Preparedness

1. Analysis

The regional inspection conducted during this assessment period by both resident and regional inspectors included a routine emergency preparedness inspection and two annual emergency response exercises. Four Emergency Plan revisions were also submitted by the licensee for NRC review.

Overall, during this SALP period, the licensee, with one exception noted below, continued to demonstrate the capability to fully implement the critical aspects of emergency preparedness during simulated or actual emergency events.

The licensee's response to simulated emergencies during the annual emergency preparedness exercises demonstrated their capability to effectively implement the Emergency Plan. A partial participation exercise was performed on November 11, 1987. A full scale exercise was performed April 14, 1988. An exercise weakness involving an incorrect emergency classification was identified during the latter exercise. Specifically, a Site Area Emergency should have been promptly declared based on the simulated loss of reactor shutdown capability concurrent with a LOCA greater than 50 gpm. In response to this finding, the licensee promptly revised the Emergency Plan and respective implementing procedure to more clearly define Site Area Emergency, Emergency Action Levels (EAL) regarding loss of shutdown function. Additionally, the

respective revised Emergency Plan implementing procedure was rendered more user friendly. Corrective action also included training of all operations personnel regarding EALs and emergency classification.

The license also effectively demonstrated their capability to correctly use EALs and promptly identify and classify an actual Alert resulting from the loss of functicns needed to maintain Unit 3 in cold shutdown. Additionally, four Notification of Unusual Event (NOUE) were promptly classified including a fire and a steam generator tube leak.

The annual exercises demonstrated the licensee's proficiency in promptly implementing protective action recommendations consistent with the licensee's Emergency Plan and respective emergency procedures, and EPA Protective Action Guidelines. The exercises also disclosed the licensee's prompt and effective implementation of dose assessment and projections attending simulated offsite releases of radioactive materials. Comprehensive critiques were conducted following each exercise. Licensee-identified findings were recorded and corrective actions required were implemented.

The routine emergency preparedness inspection found that the licensee maintained the capability for prompt notification and effective communications with offsite support agencies and emergency response facilities. Instrumentation and supplies were appropriate and emergency preparedness training was complete and effective.

The site emergency organization continued to demonstrate a strong commitment to training by development of drill scenarios and consistent use of Oconee plant specific Probabilistic Risk Assessment (PRA) data to render such drills realistic and challenging. The experience developed as a result of frequent unannounced drills and practice exercises has significantly enhanced the capability of emergency response personnel during evaluated exercises and actual emergencies.

No emergency preparedness violations were identified during this assessment period.

2. Performance Rating

Category: 1 Previous Rating: 1

3. Board Comments

Failure to promptly and correctly classify a simulated event during an emergency exercise is normally considered by the NRC to show a significant weakness in a licensee's emergency preparedness program.

Such a weakness would not be expected in a SALP Category 1 program. It was noted however, that the licensee implemented a prompt and very effective response to the exercise weakness. Subsequently, the licensee effectively demonstrated this capability during this assessment period, during an actual Alert and four NOUEs. The Board therefore concluded that the performance in this area was SALP 1.

E. Security and Safeguards

1. Analysis

The Physical Security functional area evaluates and assesses the adequacy of the security force to provide protection for the stations vital systems and equipment. To determine the adequacy of the protection provided, specific attention was given to the identification and resolution of technical issues, responsiveness to NRC initiatives, enforcement history, staffing, effectiveness of training, and qualification. The scope of this assessment includes all licensee activities associated with access control, physical barriers, detection and assessment, armed response, alarm stations, power supply, communications, and compensatory measures for degraded security systems and equipment. This evaluation is based on routine and special inspections conducted by the NRC in this area and related functional areas.

Authority and responsibilities associated with the security organization were clearly delineated and appeared to be effective. The site contract force is adequately staffed and appropriately trained and equipped. The facility guard Training and Qualification Plan is implemented on a continuing basis at all levels of the security organization using the onsite training staff.

The licensee has provided the security force with adequate procedures. Security plan changes are submitted on a timely basis and licensee records are complete, adequately maintained and available. Licensee events reports are prompt and complete.

The licensee's independent security program audit covered various aspects of the site security program and the program auditors were thorough and well acquainted with licensee commitments.

The regional staff identified a problem with the closed circuit television (CCTV) assessment capability at the beginning of this rating period. This poor CCTV assessment was partially due to low priority maintenance but more significantly due to poor design and installation. This problem was not resolved at the end of the rating period, demonstrating a slow response to regulatory concerns and a lack of urgency in addressing this

issue. The licensee has been relying on long term compensatory measures to provide this assessment capability.

One Material Control and Accountability inspection was conducted during the SALP period. This inspection was performed to determine whether the licensee had limited his possession and use of special nuclear material (SNM) to authorized locations and uses, and had implemented an adequate and effective program to account for and control all SNM in possession under license. The inspection determined that the licensee had developed and was maintaining an adequate safeguards program for the control and use of both fuel and non-fuel SNM. External reporting was found to be accurate and timely.

While the licensee has experienced an increase in the number of security related violations, they are not indicative of a major security program breakdown. Six of the violations cited during this reporting period were licensee identified. Analysis indicates that the majority of the violations are attributable to errors by individual members of the security force relative to adherence to procedural requirements and documentation rather than hardware and equipment associated problems. The one violation identified by regional inspection concerned a degraded vital barrier that had not been previously identified by the licensee. These violations indicate a need for additional attention to detail, and increased regulatory sensitivity on the part of the security force.

The violations identified were as follows:

a. Severity Level IV for allowing an employee into the protected area without a picture badge. (87-45)

b. Severity Level IV for allowing a visitor into the protected areas without a hands-on search. (87-46)

c. Severity Level IV for failure to control Safeguards Information. (87-50)

d. Severity Level IV for transmitting Safeguards Information over unprotected telecommunication circuits. (87-50)

e. Severity Level IV for degradation of the Central Alarm Station barrier bullet resistivity. (88-10)

f. Severity Level V for allowing the training certification of a member of the security force to expire. (87-46)

g. Severity Level V for allowing an escorted visitor into the protected area with incorrect access authorization documentation. (88-10)

2. Performance Rating

Category: 2 Previous Rating: 1

3. Recommendations

The Board recognized the continued high level of management and oversight and support provided the contract security force in the areas of training, staffing and procedural guidance. However, the lack of responsiveness in resolving a long standing issue relating to the assessment capability of the closed circuit television system and the increase in the number of violations, attributable to personnel error, detract from an otherwise favorable evaluation of the security program. The Board recommends management emphasis in these areas.

F. Engineering/Technical Support

1. Analysis

The Engineering Technical Support functional area addresses the adequacy of technical and engineering support for all plant activities. To determine the adequacy of support provided, specific attention was given to the identification and resolution of technical issues, responsiveness to NRC initiatives, enforcement history, staffing, effectiveness of training and qualification. The scope of this assessment includes all licensee activities associated with plant modifications, technical support provided for operation, maintenance, testing and surveillance, operator training, procurement, and configuration control. This evaluation is based on routine and special inspections conducted by the NRC in this area and related functional areas.

Engineering and technical support in this assessment period has been generally good. Design engineering (DE) activity has resulted in a number of self-identified plant problems as well as improvement initiatives. The effective utilization of engineering resources has been demonstrated by a number of issues addressed by the licensee. An exception to the generally good performance was a recurrence of a communications weakness which was identified in the previous SALP assessment period. The communication effort has improved during the latter part of this SALP period.

The plant engineering staff, outside the DE organization, is assigned to various plant functional activities, (i.e., operations, maintenance, and radiological controls), providing more timely evaluation and resolution of plant problems. In particular, maintenance engineering support was strong with

regard to involvement in field work and accessibility by craft personnel. Maintenance engineering activity involving failure analysis, preventive maintenance, and material qualification was effective.

The quality of engineering and technical support has been compromised by the quality of the communication between the plant and DE. The DE/plant communication was identified as a weakness in the previous assessment period and has been demonstrated as a weakness during this assessment period. The DE organization failed to provide the plant with adequate information regarding HPI system mode requirements and Safe Shutdown Facility HVAC configuration requirements. The former issue resulted in a violation (see violation (a)-Safety Assessment/Quality Verification). Although the initial HPI design deficiency was licensee identified the resolution was initially inadequate due to a DE/plant communications failure.

Management has taken action to resolve the communication problem. This action was to reorganize DE on a site dedicated basis, establish a small on-site DE contingent to facilitate the DE/plant interface, and assign system engineers to selected safety significant systems. These actions were not fully implemented prior to the occurrence of the communications deficiencies discussed above.

The operator training and requalification training programs are good although some simulator weakness were identified during this assessment period. The supplementation of simulator training staff with experienced plant operators on a two year rotation was a notable contributor to training program quality. Generally the simulator is updated to incorporate Unit 1 modifications, however, simulator hardware and software nonconformances existed this assessment period which impacted the value of simulator training. An example of a hardware nonconformance was the control instrumentation for the Pressurizer Power Operated Relief Valve which differed between the control room and simulator. A modification completed at the end of the assessment period corrected this hardware nonconformance. The Loss of Instrument Air simulation which did not accurately reflect the actual plant evolution was an example of a software nonconformance. Although the overall training program was generally good, simulator nonconformances which required performance compensations by the operators-in-training impacted the value of the training.

Two replacement examinations were administered during the assessment period. Eleven of eleven SRO candidates passed and six of seven RO candidates passed. Material submitted for exam

development contained minor information deficiencies but was generally adequate and legible.

The violation identified below is an outage related violation. During refueling outages on all three units, containment isolation was compromised by open one-inch emergency hatch equalizing valves and small gaps (3 to 4 square inches) in hatch seals. These failures to maintain containment isolation were the result of an inadequate temporary modification and inadequate attention to detail regarding all aspects of maintaining containment isolation during refueling outages. This violation was identified by Duke Power staff and reported to the NRC.

One violation was identified during this assessment period.

a. Severity Level IV for failure to maintain containment conditions during refueling outages (87-49)

2. Performance Rating

Category: 2 Previous Rating: Engineering Support 2
Training 2

3. Recommendations

The board noted an improved performance in this area over the assessment period. While many positive attributes were observed in this area relating to self-identified plant problems, there was recurring weakness in the quality of communications between design engineering and other plant organizations. To achieve further improvement, management attention is required in this area.

G. Safety Assessment/Quality Verification

1. Analysis

This section includes an assessment of licensee activities associated with the implementation of licensee safety policies; licensee activities related to amendment, exemption and relief requests; response to Generic Letters, Bulletins, and other NRC initiatives. This section also includes licensee activities related to the resolution of safety issues and self assessment activities.

The evaluation of licensee activities is based upon observations of numerous licensing actions active or completed during the assessment period. This included about 252 licensing activities for the three Oconee units, of which 54 were licensing amendments completed during this period.

Management involvement is evident at the corporate and station levels through planning and assignment of priorities for activities associated with licensing. Duke is an active participant and often assumes leadership roles for the industry regarding generic issues. This industry involvement includes, for example, the Association of Edison Illuminating Companies, NUMARC, various codes and standards committees, owners group committees, trade groups much as the American Nuclear Society and Health Physics Society and numerous others. The extent of Duke's involvement is commendable and much is accomplished that could not be achieved on an individual plant basis. However, Duke has not provided timely resolution and implementation of several significant, longstanding generic issues for Oconee such as ATWS mitigation design approvals, Regulatory Guide 1.97 and several TMI issues.

Duke is also an active participant in the B&W Owners Group (BWOG) safety and performance improvement program (SPIP) which has recommended numerous modifications to enhance plant performance. Duke has made significant contributions to the SPIP and has incorporated a large number of these recommendations at Oconee. However, a significant number which should enhance performance of systems such as the main feedwater system and the integrated control system are still being evaluated for implementation.

Duke's staff generally displays in-depth knowledge of the plant and of technical and regulatory issues. Duke tends to be well prepared and to provide ample support during meetings, site visits and conference calls.

Licensee Event Reports submitted by the licensee were generally well written and provided a sufficient depth of information. The reports describe the relevant aspects of the events, including component or system failures that contributed to the events and the significant corrective actions taken or planned to prevent recurrence. Previous similar occurrences were appropriately acknowledged in the reports.

The licensee has demonstrated the capability to identify plant problems and has dedicated resources to resolve these problems. Mechanisms to identify plant problems include corporate self-initiated technical audits (SITA), audits required by Technical Specification 6.1.3 information sharing with other Duke plants, and a design calculation review program. The SITA program and design calculation review program were developed using the NRC Safety System Functional Inspection (SSFI) philosophy as guidance. Oconee developed a prioritized list of systems which they will examine. These mechanisms identified problems related to the High Pressure Injection (HPI) system, start-up transformer circuit breakers, containment penetration fire barriers, Reactor Building Cooling Unit (RBCU) capacities,

electrical sliding link problems, and emergency power system overloading. The resources to evaluate and resolve these problems, particularly the RBCU fouling problems, have been considerable and reflect management commitment to operate and maintain a safe plant. Engineering activity in response to an NRC identified potential control panel configuration control problem was timely and comprehensive once the operability impact implications were recognized.

Additionally, the Oconee performance group and design engineering have been extensively involved in heat transfer performance testing of the Reactor Building Cooling Units (RBCU) for most of this assessment period. Due to fouling problems discovered at McGuire, Duke began looking at all heat exchangers for reduced heat removal rates due to fouling. It was discovered by performance testing and calculations that the RBCU's were not capable of removing their design heat capacity due to both air and water side fouling. Although the problem has not yet been fully resolved, this group (with support from design engineering personnel) has dedicated significant effort toward resolution of this issue. Duke has displayed a cooperative attitude with the NRC regarding its experiences in this field which has been a benefit to the NRCs efforts to develop generic conclusions and assess the need for future regulatory guidance.

The station manager initiated a program to conduct detailed reviews of specific INPO Significant Operating Event reports (SOERs). This review consists of extensive discussion and analysis sessions involving most of the senior onsite management. Several changes contributing to safety enhancement have been incorporated into procedures as a result of these discussions.

Breakdowns in communication, however, have hindered the resolution of problems once they have been identified. One significant example of this, which resulted in escalated enforcement, was the failure of Design Engineering to provide the plant with adequate information regarding HPI system mode requirements. This resulted in a lack of procedural guidance associated with the high pressure injection "piggyback" mode of operation (violation a). Another example of a communication breakdown as mentioned in the Engineering/Technical Support section was the Safe Shutdown Facility HVAC system circulating water pump requirements.

The licensee provided timely, sound responses to NRC generic letters, and bulletins. This was evident in the licensees resolution of issues in NRC Bulletins on main steam safety valves, masonary wall designs, nonconforming materials and fastener testing.

Oconee initiated a program during this SALP assessment period to upgrade 10 CFR 50.59 evaluations. This resulted in improved evaluations for permanent and temporary modifications, however, documentation of some evaluations for valve replacements and alarm/setpoint changes was weak. This resulted in violation (b). Another example of this problem is addressed in the Maintenance/Surveillance section.

Two violations were identified during this assessment period.

a. A Severity Level III violation with a $50,000 civil penalty for a lack of procedural guidance associated with high pressure injection piggyback operation during a loss of coolant accident. (88-25)

b. Severity Level V violation for failure to provide the basis for determination that changes did not affect an unreviewed safety question for multiple alarm and set point changes (88-13)

2. Performance Rating

Category: 2 Previous Rating: Quality Programs 1
Licensing Activities 2

3. Recommendations

Management attention as provided during the latter portion of this SALP period should continue in this area.

V. SUPPORTING DATA

A. Escalated Enforcement Actions

1. Civil Penalties

Severity Level III violation issued on December 13, 1988 for a lack of procedural guidance associated with high pressure injection "piggyback" mode of operation during a loss of coolant accident. ($50,000 CP)

2. Orders

August 6, 1987 - Elevated lake water temperature, Oconee 1

August 19, 1987 - Elevated lake water temperature, Oconee 2

B. Management Meetings

October 27, 1987	-	SALP meeting with licensee at Oconee site
March 1, 1988	-	NRC/DPC meeting at NRC office in Washington to discuss Integrated Safety Assessment Program
January 15, 1988	-	Enforcement Conference at Region II related to protection of safeguards information in electronic transmission
January 28, 1988	-	Technical meeting with Duke Design Engineering in Charlotte, NC to discuss current issues and concerns
June 7, 1988	-	Meeting in Atlanta Region II offices to discuss findings of NRC Quality Assurance Team
July 1, 1988	-	Enforcement Conference at Region II related to environmental qualification of electrical equipment
September 8, 1988	-	Meeting at Oconee to discuss fouling of Reactor Building Cooling Units
September 12, 1988	-	Enforcement Conference at Region II related to high pressure injection "piggyback" mode of operation

October 6, 1988	-	Enforcement Conference at Region II related to potential degraded capabilities of the Reactor Building Cooling Units (RBCU)
January 6, 1989	-	Enforcement Conference at Region II related to the inadequate design of the Lee Station transmission system
January 12, 1989	-	Meeting at Oconee site by with Duke Licensing group, NRC licensing Project Managers, and NRC Region II personnel

C. Confirmation of Action Letters (CAL)

January 5, 1989	-	CAL issued following switchgear fire to maintain equipment related to the fire in the "as found" condition

D. Review of Licensee Event Reports (LERs)

During the evaluation period, 29 LERs for Units 1, 2, and 3 were analyzed. The distribution of the events by cause, as determined by the NRC staff, was as follows:

Cause	Total
Component	4
Design	7
Construction, fabrication or installation	0
Personnel:	
- operating activity	3
- maintenance activity	2
- Test/calibration activity	6
- Other	4
Other	3
	29

E. Licensing Activities

During the evaluation period, review of 252 licensing actions and 54 licensing amendments was completed for the three Oconee units.

F. Enforcement Activity

Functional Area	No. of Deviations and Violations in Each Severity Level				
	Dev.	V	IV	III	II	I
Plant Operations			2			
Radiological Controls			2			
Maintenance/Surveillance		4	9			
Emergency Preparedness						
Security		2	5			
Engineering/Technical Support			1			
Safety Assessment/Quality Verification		1		1		
TOTAL		7	19	1		

G. Reactor Trips

A total of five automatic trips occurred during this rating period, two on Unit 1, one on Unit 2 and two on Unit 3. Seven automatic trips occurred during the previous rating period. One manual trip was also experienced. The trips are described in more detail below.

1. Unit 1

   a. On July 5 an automatic trip occurred from 100% power due to an error by an Instrument and Electrical (I&E) technician while troubleshooting a turbine header pressure instrument.

   b. On January 2, 1989, a trip from 100% power occurred during surveillance of the Reactor Protection System due to an I&E technician error. Channel D was tripped when Channel A was also in a tripped condition.

   c. On January 3, 1989, a manual trip from less than 15% power due to a fire in a 6900V Reactor Coolant Pump switchboard.

2. Unit 2

   a. On August 26, 1988, an automatic trip occurred from 100% power due to a anticipatory reactor trip on turbine trip caused by a faulty Moisture Separator Reheater high level instrument.

3. Unit 3

a. On November 14, 1988, the reactor tripped from 100% power due to a main turbine trip. The reason for the main turbine trip could not be identified and the reactor returned to power.

b. On November 14 while recovering from the trip discussed above, the reactor again tripped. Power was at 39% and the reason for the trip was a main turbine trip due to faulty relay in the steam generator high level circuitry. The reactor tripped due to high reactor coolant system pressure.

H. Effluent Release Summary

Activity Released (Curies)	1985	1986	1987	(First Half) 1988
1. Gaseous Effluents				
Fission and Activation Products	2.35 E+4	2.43 E+4	1.05 E+4	1.85 E+4
Iodines and Particulates	6.14 E-3	5.41 E-2	1.58 E-2	9.74 E-2
2. Liquid Effluents				
Fission and Activation Products	4.16 E0	5.85 E0	2.90 E0	1.57 E0
Tritium	1.24 E+3	1.34 E+3	9.49 E+2	4.28 E+2