ENCLOSURE

INITIAL SALP REPORT

U. S. NUCLEAR REGULATORY COMMISSION

REGION II

SYSTEMATIC ASSESSMENT OF LICENSEE PERFORMANCE

INSPECTION REPORT NUMBER

50-338,339/91-25

VIRGINIA ELECTRIC AND POWER COMPANY

NORTH ANNA UNITS 1 AND 2

FROM SEPTEMBER 1, 1990 THROUGH NOVEMBER 2, 1991

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I. INTRODUCTION

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 on the basis of this information. The SALP 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 assessment of their facility's performance in each functional area.

An NRC SALP Board, composed of the staff members listed below, met on December 9, 1991, to review the observations and data on performance and to assess licensee performance in accordance with Chapter NRC-0516, "Systematic Assessment of Licensee Performance."

This report is the NRC's assessment of the licensee's safety performance at North Anna for the period September 1, 1990 through November 2, 1991.

The SALP Board for North Anna Units 1 and 2 was composed of:

J. Johnson, Deputy Director, Division of Reactor Projects (DRP), Region II (RII), (Chairperson)
A. Gibson, Director, Division of Reactor Safety (DRS), RII
P. Stohr, Director, Division of Radiation Safety and Safeguards (DRSS), RII
M. Sinkule, Chief, Reactor Projects Branch 2, DRP, RII
H. Berkow, Director, Project Directorate II-2, Office of Nuclear Regulation (NRR)
L. Engle, Senior Project Manager, Project Directorate II-2, NRR
M. Lesser, Senior Resident Inspector, North Anna, DRP, RII

Attendees at SALP Board Meeting:

P. Fredrickson, Chief, Reactor Project Section 2A, DRP, RII
D. Taylor, Resident Inspector, North Anna, DRP, RII
A. Ruff, Project Engineer, Reactor Project Section 2A, DRP, RII
M. Janus, Project Engineer Intern, Reactor Project Section 2A, DRP, RII
J. Wiseman, Reactor Engineer, Technical Support Staff, DRP, RII

II. SUMMARY OF RESULTS

The overall safety performance of North Anna was excellent during the assessment period. Both the Radiological Controls and the Security functional areas improved from the previous assessment period. Also, performance in the Emergency Preparedness and Safety Assessment/Quality Verification areas continued to be maintained at a excellent level.

Performance in the Plant Operations and Engineering/Technical Support functional areas declined; and the Maintenance/Surveillance functional area remained at a good performance level.

With respect to Plant Operations, although station and corporate management maintained a strong commitment to safe operations during the assessment period, performance declined during the assessment period primarily due to an increased number of personnel errors. Although overall operator performance was good, problems involving operator errors surfaced both early and midway in the assessment period. The licensee's tracking and trending programs identified these adverse trends, and toward the end of the assessment period, the number of errors had decreased. Continued management attention in this area should assure that these personnel errors are corrected.

Performance in the Radiological Controls area continued to improve from the previous period. This performance change was, in large part due to the collective dose for work activities performed during the period being appropriately controlled. In addition, the Contamination Control Program was excellent with contaminated areas and personnel contamination events continuing to be reduced.

The Maintenance/Surveillance area, although unchanged in overall performance level, demonstrated a noted difference in performance between maintenance activities and surveillance activities. Most maintenance programs showed improvement and strengths were noted in predictive analysis. In addition, the quality of selected upgraded maintenance procedures was very good and the overall material condition of plant equipment was excellent. With respect to surveillances, a decrease in performance occurred primarily due to a large number of inadequately performed surveillances. The primary contributor to this was the implementation of the licensee's Section XI Pump and Valve Testing Program. Management should ensure that surveillance program changes are correctly incorporated into procedures and implemented.

The licensee's Emergency Preparedness Program continued to be well organized and implemented. Effective training and management involvement, prompt identification and correction of problems and detailed self-assessments contributed to the continued high level of performance in this area.

Security performance also revealed continued improvement in the overall effectiveness of the program due to the continued support by both corporate and station management and the professionalism of the security staff. This improved performance was also demonstrated by a programmed security systems upgrade which included several significant enhancements.

Although satisfactory overall, performance in the Engineering/Technical Support area declined during the assessment period. Inadequate technical support to operations and maintenance was the primary contributor to this decline. This deficiency was demonstrated by several design change

problems that were attributed to a weakness in implementing procedure changes following the modifications. Toward the end of the assessment period, program revisions were made to improve design change effectiveness. Management attention in this area is needed to ensure that modifications are properly evaluated for impact and that procedure change backlogs are reduced.

The Safety Assessment/Quality Verification area continued to reveal a strong management commitment to nuclear safety and quality assurance. Several initiatives were implemented by the station management, such as the use of performance indicators. Also, efforts to enhance nuclear safety during plant shutdowns were particularly noteworthy. Conservative approaches were used in dealing with unusual events and the site Quality Assurance (QA) organization was active in daily plant activities.

Overview:

Performance ratings assigned for the last assessment period and the current period are shown below.

Functional	Rating Last Period	Rating This Period
Plant Operations	1	1 Declining
Radiological Controls	2 Improving	1
Maintenance/Surveillance	2	2
Emergency Preparedness	1	1
Security	2	1
Engineering/Technical Support	1	2
Safety Assessment/Quality Verification	1	1

III. CRITERIA

The evaluation criteria which were used, as applicable, to assess each functional area are described in detail in NRC Manual Chapter 0516. This Chapter is in the Public Document Room files. Therefore, these criteria are not repeated here, but will be discussed in detail at the public meeting with the licensee's management on January 27, 1992.

IV. PERFORMANCE ANALYSIS

A. Plant Operations

1. Analysis

This functional area addresses the control and performance of activities directly related to operating the units.

Overall performance in this functional area was excellent. However, there was an increased number of personnel errors when compared to the previous

assessment period. Plant operations were generally conducted safely and conservatively; however, errors caused by inattentiveness, Technical Specification misunderstandings, and controls over equipment contributed to several reportable events and violations. Increased emphasis on the licensee's previously successful self-checking and coaching programs was initiated midway in the assessment period and resulted in a decline in personnel errors toward the end of the assessment period.

During the assessment period Unit 1 continued to perform very well and completed a period of 352 days of continuous operation prior to shutting down for a scheduled refueling outage on January 11, 1991. During the outage, operations evolutions were conducted effectively and safely and the unit returned to power 5 days early, on March 9. During the second half of the assessment period, however, several equipment-related problems resulted in forced outages, including one reactor trip. These are further discussed in the Maintenance/Surveillance area.

Unit 2 continued to operate in an excellent manner throughout the assessment period, starting with a successful refueling outage which was completed ahead of schedule. Unit 2 experienced two automatic reactor trips. The first trip occurred from 9 percent power upon initial start-up following the outage. Feedwater isolation occurred due to operator error while controlling steam generator (SG) levels and the subsequent failure to properly reset feedwater (due to inadequate procedures) led to the trip. After restart, the unit operated continuously for 322 days. The second automatic reactor trip resulted when a faulty driver card caused a feedwater regulating valve to fail closed. This is further discussed in the Maintenance/Surveillance area.

Station and corporate management actions demonstrated a strong commitment to safety throughout the assessment period. This was clearly evident in programs implemented to operate and manage activities during shutdown operations. Mid-loop operations were conducted safely through a combination of good procedures, redundant instrumentation, high degrees of sensitivity and thorough training. A graphical tool of critical parameters was used by station management on a daily basis during outages to raise awareness of the availability of safety systems. Procedures and policies for performing activities in the switchyard were enhanced to reduce the possibility of electrical power losses. Conservative decisions were made by station management during power operations. An example of this was a power reduction for reactor coolant system (RCS) leakage and corrective actions being initiated prior to reaching Technical Specifications limits. Assessments performed by station management to ensure operational readiness prior to reactor start-ups were rigorous and thorough.

Plant knowledge, awareness and control of daily activities by station management continued to be a strength. Accountability and a low threshold for identifying and correcting problems were emphasized. In most cases, management expectations were clearly understood. The use of the

operations local area network portable computers was expanded and remained a significant tool for monitoring the status of systems. In addition to the previously established programs that allowed easy access to annunciator response procedures, Technical Specifications, and equipment status, new programs were established. These included the station load list, procedure reference list, heat trace reference list and an interface with the plant computer for obtaining on-line data. Responsibility of the equipment status programs was assigned to the operating shifts. A continued strength included the use of hand-held computers for taking all plant logs and the ability to easily retrieve and display parameters for trending.

Station housekeeping and cleanliness controls were outstanding. Management's commitment to superior standards was evident as the station's painting program progressed into the diesel generator rooms, safeguards building and turbine building basement. Auxiliary building, turbine building and administrative building roof overhaul's were completed. These programs, along with the continued reduction of contaminated surface area, improved morale and access to plant equipment.

The licensee's shift staffing was increased with the addition of a fourth Senior Reactor Operator (SRO) - Balance of Plant Supervisor to each shift, and staffing continued to exceed the Technical Specification requirements for plant operation and fire brigade manning. The five operating shifts were staffed with four SROs, five Reactor Operators (ROs) and one Shift Technical Advisor. Operators responded positively to a change, initiated early in the assessment period, from eight-hour shifts to twelve-hour shifts. Operator turnover was very low.

Station management's involvement in, and support of, training was clearly evident. Training on the plant simulator was conducted for those managers who staff the Technical Support Center (TSC) during an emergency. Procedures for accident scenarios were reviewed by management prior to running the simulation. The program was effective in keeping management aware of the operators' roles and concerns during potential emergency situations.

Midway through the assessment period, the licensee embarked on a new component labelling program. The new labels were color coded according to unit and included the component mark number, name, power supply (if applicable) and bar coding. New plastic coated drawings in the control room proved to be more durable. These changes were significant enhancements for use by operators.

The attitude of the operators was good, as exemplified by their professional demeanor. Daily operations' activities disclosed a low threshold for problem identification. Operations personnel interfaced well with maintenance personnel to routinely achieve a "black board" condition for control room annunciators. Examples where prompt action was initiated during plant transients to avert further complications included effective response to a loss of condenser vacuum, a failed open feedwater

regulating valve and a loss of a normal power source. A questioning attitude by operators was also prevalent and led to the identification of an inadequate containment closure during core alterations and an inadequate service water system alignment. Pre-job briefings, and shift turnovers continued to be used effectively in promoting good communications.

Although overall operator performance was good, a greater number of operator errors, as compared to the last assessment period, resulted in an increased number of reportable events and violations. The majority of the errors occurred early and midway through the assessment period. Inattentiveness resulted in the operation of wrong switches causing the loss of an emergency bus in one case, the loss of all charging pumps on another occasion and an incident where the emergency diesel generator was paralleled out-of-phase. Inadvertent reset of one train of safety injection during an event caused an unexpected control room status light response and contributed to confusion in classifying the emergency and a delay in making a one-hour report under 10 CFR 50.72. Incomplete understanding of Technical Specifications requirements was identified with respect to explosive gas mixtures in the waste gas decay tanks, and with the relationship between emergency power sources and operability of safety systems. SG level response during two start-ups was not correctly anticipated and resulted in loss of water level control; one of which led to a reactor trip.

Control of equipment during non-routine evolutions in some cases was inadequate and resulted in weakness with tag-outs early in the assessment period, and an inoperable air ejector exhaust radiation monitor late in the assessment period. Numerous valve, circuit breaker, and switch mispositions were attributed to combinations of inadequate procedures and personnel errors. In one case a bypassed seal water injection filter caused degradation of a reactor coolant pump seal. Weaknesses were also identified with controls over safety injection branch line throttle valve positioning. The licensee's threshold for trending the mispositions was very low and no safety system inoperabilities resulted, however, the high number was indicative of configuration control problems.

The licensee's tracking and trending programs identified adverse operator performance at the onset of the assessment period, primarily as a result of a high number of equipment mispositions. Management actions were to emphasize attention to detail in addition to addressing individual problems related to tagging or procedures. The corrective action appeared to be effective for a short period of time; however, toward the middle of the assessment period another series of human performance errors occurred. At this point, management pursued an action plan to deal with the performance weaknesses. These included the use of independent assessments by QA and third parties, an increased emphasis on the self-checking and coaching philosophies and more effective use of a fourth SRO on shift to oversee these evolutions. Although the number of errors, particularly the mispositions, had decreased toward the end of the assessment period it was not clear that this problem had been fully resolved.

Several weaknesses were identified with procedures used to operate the plant. Valve alignment procedure deficiencies contributed to some of the previously discussed mispositions. This occurred due to minor modifications to systems being implemented by engineering work requests (EWRs) prior to their review for impact on station procedures and a high backlog of these procedures waiting review. The overall backlog of procedure action requests for operating procedures was also high and did not appreciably change throughout the assessment period. One inadequate procedure contributed to a reactor trip and another failed to ensure that the service water system could provide design flows to accident loads. Corrective action for the service water issue was not fully effective in that late in the assessment period, the system was again misaligned for a short period with the potential for inadequate flows. Although directly impacting plant operations, most of the procedure deficiencies were considered to be the result of inadequate technical support, as discussed in the Engineering/Technical Support functional area.

Although progress to correct deficiencies identified during the previous assessment period was slow, the licensee's emergency operating procedures remained adequate to cover the broad range of accidents and equipment failures necessary for safe shutdown of the plant. Additionally, the abnormal operating procedures were revised during this assessment period to a new format consistent with the emergency operating procedures. Although these procedures were revised, problems were identified with the "Loss of All AC Power" abnormal procedure due to ineffective validation and verification. A dedicated operations procedure writer was recently stationed in the plant to help improve the ability to process day-to-day procedure changes.

Four violations were issued during the assessment period.

2. Performance Rating

Category: 1 Declining

3. Board Recommendations

Although the Board determined that the overall performance of this functional area remained at a high level, the negative trend in personnel errors was a concern. Since this performance trend occurred throughout the assessment period, the Board could not conclude that the licensee had identified the root cause and taken effective, permanent corrective action. Licensee management should ensure that the actions taken during the assessment period are sufficient to correct this adverse performance trend.

B. Radiological Controls

1. Analysis

This functional area evaluates activities related directly to radiological controls, radioactive waste management, radiological effluent control, environmental monitoring, water chemistry, transportation of radioactive materials, and verification of the calculations in the licensee's Offsite Dose Calculation Manual (ODCM).

The Radiation Protection Program continued to be effective in controlling personnel exposures and protecting the health and safety of the public and the workers. Management support for the Radiation Protection Program was evidenced by program improvements and enforcement of radiation protection requirements. All internal and external radiation exposures were below regulatory limits during the assessment period.

Management clarified their expected work attitudes and partially as a result of this, health physics (HP) technician as well as worker performance in radiological controls were considered as strengths during this assessment period. Staffing levels were adequate to control the work scope effectively.

The licensee's collective dose for this assessment period (14 months) was 1,148 person-rem. This is only slightly higher than the projected goal of 1132, largely because of increased work on the SGs. Approximately 44% of the collective dose during the outage was due to work performed on the SGs. Collective dose for both the SG work and other activities was appropriately controlled and reasonable considering the work performed.

Dose reduction efforts during the Unit 1 outage included the following techniques: hot standby boric acid shock to enhance RCS cleanup, increased use of robotics in refueling and SG repair, remote cleaning of the head flange, use of packing extraction tools, use of cameras and monitors for HP coverage for SG work, increased use of temporary shielding, and continued hot spot flushing. The licensee showed good dose reduction initiative by performing an evaluation of a new chemical process for future decontamination of the SG channel heads and RCS.

The licensee's Contamination Control Program was excellent. Station contaminated area continued to be reduced in the radiologically controlled area (RCA). Contaminated area at the end of the assessment period was 2,958 square feet versus the goal of 4,000 and was well below the 5,300 square feet at the end of the previous assessment period. This represents approximately 3% of the total 95,280 square feet of the RCA, and has contributed to dose reduction and improvement in both housekeeping and the radiological material condition of the station.

Personnel contamination events (PCEs) continued to decline during the period, as did clean area PCEs. The licensee's total number of PCEs for the assessment period was 234, which was well below the number of PCEs in the previous assessment period and the licensee's goal of 361.

The Radiological Environmental Monitoring Program was effectively managed. A review of the 1990 annual Radiological Environmental Operating Report indicated that environmental monitoring was implemented per Technical Specifications requirements. There were no significant radiological consequences attributable to the operation of the plant during 1990 from inhalation, ingestion, or direct exposure pathways.

The Liquid and Gaseous Effluent Program was satisfactorily managed. Liquid and gaseous effluent releases and resultant doses for the calendar year 1990 were within Technical Specifications, 10 CFR 20, Appendix B; and 10 CFR 50, Appendix I limits. Effluent releases for the first six months of 1991 were consistent with releases reported for 1990. During 1990, the doses to the public due to effluents ranged from less than one percent (gaseous) to twenty one percent (liquid) of the applicable limits. The doses were typically less than those reported for 1989. No unplanned releases, as defined in 10 CFR 50.73, were reported during this assessment period. North Anna was conservative in recording unplanned releases, in that several, which were well below this reporting criteria were recorded.

During this assessment period, the NRC performed an independent assessment of the licensee's dose calculations. The methodology in the licensee's ODCM was verified to yield equivalent results, as compared to the computer programs that the licensee used to calculate the offsite doses from effluent releases.

The licensee's program for the classification and transportation of low level radioactive waste was good. The licensee was properly classifying waste in accordance with the requirements of 10 CFR 61. Radiation and contamination surveys were within the limits specified for the modes of transport and shipment classification. Shipment manifests generally were consistent with 49 CFR requirements; however a problem involving under-estimation of the correct radioactivity on a shipment manifest for a radioactive waste shipment occurred during this assessment period. Corrective action was timely and thorough.

The primary and secondary chemistry program was well managed. A computer network continuously monitored secondary system parameters and provided trending capabilities. Primary chemistry parameters were maintained well within Technical Specifications requirements and the Electric Power Research Institute/Steam Generator Owner's Group (EPRI/SGOG) guidelines. Secondary chemistry parameters typically were maintained within EPRI and SGOG guidelines. The licensee's chemistry program to protect SG tube integrity was noteworthy. The program for the secondary side included continued boric acid treatment to prevent further tube denting; and the initiation of morpholine treatment to reduce iron corrosion product transfer.

Previously, a problem with microbiological-induced corrosion (MIC) had been identified throughout the facility's service water system. During this assessment period, the licensee performed a study to determine the extent of the MIC attack and possible solutions. At the end of this assessment period the licensee had not yet decided the appropriate course of action.

Radiological control audits performed by the licensee's QA department were considered a program strength. Audits reviewed in the areas of plant chemistry, environmental protection, and solid radioactive waste and transportation were thorough with sufficient detail to provide extensive insight relative to performance within the areas being examined.

Two violations were issued during the assessment period.

2. Performance Rating

Category: 1

3. Board Recommendations

None

C. Maintenance/Surveillance

1. Analysis

This functional area addresses those activities related to equipment condition, maintenance, surveillance performance, and equipment testing.

During this assessment period the licensee's maintenance programs showed improvement. These included maintenance programs for motor-operated valves, check valves, and relief valves. Each program required specific preventive maintenance and/or diagnostic testing, trending and evaluation of failures. With a few exceptions, maintenance of electrical equipment was a strength. An exception was lack of a program for replacing electrical circuit breakers before their service life was exceeded. A higher forced outage rate when compared to the last assessment period, was due to several equipment-related problems. Several weaknesses in the Surveillance Program resulted in an excessive number of missed or inadequate surveillances.

Preventive maintenance was implemented effectively. The percentage of deferrals was significantly reduced early in the assessment period and remained low. Deficiencies identified, such as charging pump cooler fouling, instrument air compressor lubrication, and control room chiller trips, were promptly addressed. Reliability-centered maintenance studies were initiated and completed on the following systems: auxiliary feedwater (AFW), emergency diesel generator (EDG), recirculation spray, safety injection, and service water. The licensee is currently in various stages

of implementing the study results. Turbine electro-hydraulic control problems in the last assessment period were addressed by improved preventive maintenance that resulted in no significant problems with the system during this assessment period.

Strengths were noted in predictive analysis. Vibration and trending analyses of rotating equipment significantly exceeded the minimum requirements of ASME Section XI. In-house analysis of machinery lubricating oils allowed fast turnaround for prompt corrective action in the case of a turbine lube oil foreign material intrusion event. Additionally, the licensee developed methods for using infrared thermography on electrical switchgear and was developing computer software programs, utilizing a large data base, for trending and identifying instrument drift problems. As an example, instrumentation personnel detected an impending failure of a differential pressure transmitter by using the plant computer to trend its response.

Maintenance planning weaknesses identified in the previous assessment period were adequately addressed and showed improvement. Staffing levels increased with the addition of six maintenance planners. Dedicated mechanical maintenance planners were assigned to each crew. Management involvement in the assignment of priorities through the quarterly, weekly and daily schedules was consistently evident. This was exemplified by a continued low corrective maintenance backlog of non-outage work orders and reduced average age. The ability to maintain a low backlog contributed to high equipment reliability and excellent material condition. During a major inspection of the licensee's electrical distribution system, it was noted that no outstanding work orders existed on the EDGs.

Planning work further in advance has also led to improvements in the ability to obtain parts on time. Effective mechanisms were in place to highlight older work items to management which were generally promptly pursued. Management was sensitive to the importance of maintaining high availability of safety systems. Planning was effectively coordinated with other departments to accomplish maintenance activities in minimal time-frames. Management continued to emphasize the "black board" concept for control room annunciators.

Specific maintenance planning for outages was excellent. Two refueling outages were conducted during the assessment period. Work activities were scheduled with the use of the system windows concept, in which a particular system is "open" for work during a specified portion of the schedule. Outage scope was closely controlled and when scope expansion was required, the activities were effectively managed. Outage workshops were also useful in enhancing communications. Both refueling outages were completed ahead of schedule without any significant deferrals. Additionally, preventive and corrective maintenance on the opposite unit was typically performed without deferral.

The Technical Procedures Upgrade Program (covering 3000 maintenance procedures) was approximately 25 percent complete. The upgraded procedures provided detailed maintenance steps for components and included features such as references, consistent writing style and excellent graphics. The quality of the upgraded procedures was very good, and was a significant improvement over the generic procedures.

However, continued improvement in some areas of maintenance procedures was still needed. For example, a high backlog of procedure action requests for instrument calibration procedures continued to exist. Difficulties were experienced with containment purge valve leakage when maintenance procedures did not adequately incorporate detailed installation steps. A hydrogen ignition event occurred, due in part to lessons learned regarding explosive gas monitoring not being factored into welding procedures. Failures continued to occur with the low head safety injection relief valves, in part, due to the combination of inadequate maintenance procedures and less than effective training. This problem was also identified in the previous assessment period. The licensee corrected the procedure and training inadequacies, however, hardware problems continued during the assessment period and are discussed in the Engineering/Technical Support area.

A new Post-Maintenance Test Program was developed to provide more consistent testing and to shift decision making away from the Shift Supervisor to the maintenance planning effort. This program was implemented at the end of the assessment period.

During the assessment period, the level of maintenance staffing was adequate. In addition, maintenance craft personnel exhibited strong component knowledge and job skills. Mock-ups were used whenever possible and proved to be particularly useful during a turbine blade cutting evolution. The Quality Maintenance Team approach, where quality control inspections are performed by craftsmen, was used effectively. Formal briefings before and after work activities along with a formal program to resolve barriers experienced in the work process, added to continuing improvement in efficiency and lessons learned.

Personnel errors in maintenance were few but contributed to safety system challenges. These included 1) improper installation of an over-current trip auxiliary relay which caused loss of power to an emergency bus, 2) inadequate trouble shooting activities on a containment airlock door limit switch and 3) inadequate communication between maintenance and operations personnel contributing to the hydrogen ignition event discussed above. The personnel errors were attributed to inadequate attention to detail and unclear understanding of management policies.

The overall material condition of equipment was excellent, as indicated by high equipment availability, a low rate of test failures, and a good preventive/corrective maintenance ratio. Some equipment-related problems, however, contributed to challenges to plant operations and a higher number of forced outages toward the end of the assessment period. On two

occasions repairs were necessary due to increased RCS leakage on the resistance temperature detector (RTD) bypass manifold. This has been a recurring problem and plans are in place to remove the manifolds in upcoming outages. In each case management responded to bring the reactor to a safe condition at the earliest detection of a problem. Electronic card failures in various systems caused personnel and systems challenges, including one reactor trip and one safety injection. A feedwater card failure was similar to one in the previous assessment period, which also resulted in a trip. Moisture intrusion into a junction box resulted in the closure of a main steam trip valve and subsequent reactor trip and safety injection. Other significant problems included a failed condenser expansion joint. The licensee reviewed the failures and, in some cases, identified that more effective inspection methods were needed.

Surveillance testing during this assessment period was generally conducted in a safe manner and under the control of operations. Test alignments were properly reviewed for train operability considerations and appropriate action statements were followed. During this assessment period surveillance testing was effective in identifying two significant issues involving incorrectly set safety injection throttle valves and incorrect installation of service water butterfly valves.

In some cases management's policy was not clearly understood with regard to as-found results determined to be out-of-tolerance. As an example, adjustments were made to EDG load sequencing timers during testing without documenting as-found deviations for further review by management.

Although the program for scheduling and conducting surveillances was generally adequate, implementation was a problem in that a significant number of surveillances were not adequately performed. Major contributors to this increase were a misunderstanding of the requirements and a failure to implement revised requirements of the licensee's ASME Section XI Pump and Valve Testing Program.

Weaknesses in this area continued from the last assessment period. Lack of understanding of requirements allowed for alternate test methods without prior NRC approval on steam supply check valves for the AFW turbine, and boric acid pumps. Another contributor to these events was ineffective management of resources to incorporate programmatic changes into procedures. Management responded to the weaknesses by initiating a programmatic review of the Pump and Valve Testing Program. Additionally, engineers were reassigned from actual testing duties to better oversee and develop the program and procedures. A test procedure cross-reference list was being developed to avoid further problems.

Other surveillance implementation problems were attributed to inattention to detail and included: failure to verify the operability of off-site electrical sources, failure to recognize that electrical containment penetration protection fuse resistances fell outside specified acceptance criteria, and failure to completely test all portions of the pressurizer power operated relief valve control circuitry. Lack of controls over

procedures used to test emergency bus undervoltage relay time response and time delays resulted in incorrect acceptance criteria. Finally, scheduling and tracking problems resulted in a failure to test the low temperature overpressure protection system and safety injection accumulator nitrogen valves. Licensee actions to address missed surveillances included establishment of a Surveillance Engineer and a Periodic Test Coordinator position for each department.

During this assessment period inservice inspection (ISI) implementation was satisfactory. The examinations were conducted adequately by qualified personnel. The SG eddy current inspection program was extensive, with expanded samples, multiple probes, and effective user-friendly software.

Three violations were issued during the assessment period.

2. Performance Rating

Category: 2

3. Board Recommendations

None

D. Emergency Preparedness

1. Analysis

This functional area includes activities related to the Emergency Plan and implementing procedures, support and training of onsite and offsite emergency response organizations, and licensee performance during emergency exercises and actual events.

Overall, the licensee's Emergency Preparedness Program was well organized and received strong management support. The licensee maintained the basic emergency preparedness elements needed to identify promptly, classify correctly, staff sufficiently, and implement effectively the elements of the Emergency Plan and respective emergency procedures in response to events. The program was maintained in a state of operational readiness with adequate facilities, equipment, and staff for responding to an emergency. Program strengths included the following: 1) effective training of onsite and offsite emergency response personnel, 2) effective management of the ongoing requirements and commitments within the licensee's Emergency Plan, 3) prompt identification and correct classification of emergency conditions, 4) conduct of independent audits and self-assessments that were detailed and effective in the identification of weaknesses, 5) demonstrated aggressiveness in responding to augmentation issues, and 6) maintenance of an effective tracking system for ensuring prompt and adequate corrective action on deficiencies.

The emergency exercise conducted on May 15, 1991 demonstrated that the licensee could effectively implement the Emergency Plan and its emergency preparedness implementing procedures. The licensee demonstrated effective assignment of emergency response organization responsibilities and took suitable actions to mitigate the on and offsite consequences of the accident scenario. Activation, staffing, and operation of the Emergency Response Facilities (ERFs) and equipment observed during the annual exercise were good. The emergency classification system was used promptly and correctly by the Emergency Coordinator to classify the simulated emergency as the scenario progressed. Communication of information occurred in an effective manner. Interfaces between the onsite response organization and offsite support agencies were effectively coordinated. Overall, the exercise was fully successful with no exercise weaknesses identified. However, two issues requiring corrective action were identified during the exercise. One involved numerous examples of communications problems between the TSC and Control Room personnel which were noted with respect to the status of changing events such as evacuation of non-essential personnel from the plant and the status of a bomb threat. The licensee committed to corrective action in this area to enhance the ability to establish and maintain effective communications between the TSC and the Control Room. The second issue concerned a need for the licensee to reevaluate its procedures for issuing self-reading dosimeters to personnel in onsite ERFs once they are activated. The licensee committed to review the adequacy of its procedures in this area.

During this assessment period, the licensee's Emergency Plan was implemented five times in response to events, all of which were classified as Unusual Events (UEs). In addition, the licensee also conducted two full-scale exercises with full ERF activation in addition to the graded exercise during the period. In most cases, the event classification was prompt and correct, and offsite authorities were notified in accordance with applicable requirements. One exception was a late classification of a safety injection UE. No other discrepancies were noted.

The licensee continued to maintain effective emergency communications systems, equipment, and trained staff. The licensee also initiated an upgrade for recalling emergency response personnel known as the Emergency Response Automatic Notification System to reduce the call-in time for off-hours ERF activation. During an off-hours activation drill call-out conducted during the middle of the assessment period the licensee was able to demonstrate timely ERF activation per Emergency Plan commitments. The licensee also took the initiative this assessment period to install an Emergency Response Data System (ERDS) well in advance of ERDS implementation becoming a regulatory requirement.

No violations were issued, and no exercise weaknesses were identified during the assessment period.

2. Performance Rating

Category: 1

3. Board Recommendations

None

E. Security

1. Analysis

This functional area addresses the adequacy of the Security Program to provide protection for plant vital equipment and special nuclear material (SNM) as required by program commitments and regulatory requirements. The scope of the assessment included licensee activities associated with access control, physical barriers, detection and assessment, armed response, alarm stations, power supply, communications, and compensatory measures. In addition, the area addresses the licensee's Fitness for Duty Program.

Security performance revealed continued improvement in the overall program effectiveness. Professionalism and dedicated performance was demonstrated by security personnel observed in daily activities. Continued support by corporate and station management was evident as demonstrated by the program enhancements noted below. A major strength of the licensee's Security Program was the continued good communications and coordination among site, corporate and NRC personnel, regarding security plan revisions, equipment upgrades and other pertinent regulatory issues.

Several changes to the Security Program included the following enhancements: replaced electric door strikes, upgraded intrusion detection equipment, improved access control equipment, and upgraded barriers to safety-related equipment and facilities. These enhancements were beyond the scope of current physical security plan commitments.

Other initiatives and innovative actions to improve the effectiveness of the Security Program were implemented during the period. A change was made in the type of weapons used for contingencies, and a computerized data base was established to track and trend maintenance activities, safeguards events and priority projects. Significant benefits in Security Program management and resource utilization were derived from these actions. An additional enhancement to aid security in accomplishment of a secondary function included the installation of a computerized emergency call-out system to expedite call-out of emergency response personnel. The system has the capability of being activated from either corporate headquarters or the North Anna or Surry stations. This is further discussed in the Emergency Preparedness area. The licensee purchased a video imaging system to provide the ability to transmit security badge photographs from the centralized in-processing location, which is remote to the protected area, to the security badging office adjacent to the entrance portal. This is expected to reduce the miss-issuance of badges to new employees.

Additional security initiatives included installation of monitoring devices, and improved pre-positioning of security response equipment. Of particular note, was the observed licensee practice of dispatching an SRO to the security alarm station to establish and maintain the safety/safeguards interface during security contingency response drills and actual events.

The Security Training Program continued to be highly visible with an aggressive and challenging curriculum, specifically, in the area of contingency response. These training initiatives included the following: improved relationship with operations personnel in coordinating responses during contingency events, use of a laser engagement system for response training, and enhancement of response strategies.

The licensee's Fitness for Duty Program was effective in meeting the objectives of attaining a drug-free workplace. Implementation was satisfactory, with the following strengths noted: effective management of the Fitness For Duty staff, thoroughness of QA audits, and testing for a broader scope of drugs than required by regulatory requirements.

Inspection of the licensee's Material Control and Accountability (MC&A) Program confirmed a licensee identified problem in the area of accountability of SNM. The problem involved the failure to maintain accountability records for a stored incore detector. Except for this issue the licensee had effectively established, maintained and followed approved written MC&A procedures for controlling and accounting for SNM.

No violations were issued during the assessment period.

2. Performance Rating

Category: 1

3. Board Recommendations

None

F. Engineering/Technical Support

1. Analysis

This functional area addresses those activities associated with engineering and technical support, including activities associated with design of plant modifications, engineering and technical support for operations and operator training.

Overall, engineering and technical support performance was satisfactory during this assessment period. Working relationships between onsite engineering and corporate engineering were effective.

Design change controls in general were considered adequate. Examples were the RCS drain-down level indication modification and the design change allowing testing of the AFW pumps at power with full-flow conditions. Design change documentation was readily retrievable and the technical staff demonstrated a sound knowledge of the design change process. Both the plant and corporate engineering organizations demonstrated effective organizational interfaces.

However, several design change interface problems were identified. The failure to make procedure revisions following a design change for the instrument air system had the potential to overload the EDG in the event of a postulated design basis accident. Also the licensee found that engineering's failure to conduct a required technical review of a modification to valve wiring resulted in priority drawings not being updated. Also drain valves that were added to the atmosphere cleanup and blowdown system and the charging system, were not reflected in valve lineup procedures. Inadequate procedure reviews for the impact of a modification to eliminate reactor trip (on turbine trip at less than 30% power) failed to identify the need for a turbine trip procedure. Subsequent review by the licensee identified at least six annunciator response procedures that were not updated by this design change package. An inadequate design change of the EDG start relays and a subsequent documentation failure resulted in an inadvertent loss of power to the 2J emergency bus during testing. Many of these design change problems were attributed to a weakness in implementing procedure changes following design changes. In addition, as discussed in the Plant Operations area, the backlog of installed EWRs waiting to be evaluated for impact on station procedures remained high, and was indicative of a continuing problem with procedure revision priorities and inadequate management attention.

Toward the end of the assessment period, the licensee implemented revisions to the Design Change Program to improve its effectiveness including elimination of EWRs as a means to perform a modification.

System engineering personnel were involved in maintenance, operations, procurement and testing on a real time basis as well as in review of the results. The system engineering organization was staffed with engineers who were knowledgeable and competent. Engineering's actions to ensure that longitudinal pipe fitting welds were included in the ISI Program were acceptable. System engineers conducted the major system functional tests during outages, reviewed requests for system modifications and design studies, and provided system status reports to management. High priority systems (those with the highest potential to affect plant safety and reliability) received extensive attention by the system engineers through programs that track system parameters, work orders, corrective actions, and field walkdowns. The quarterly system engineering report was an effective vehicle to provide management with useful information needed for the allocation of resources.

Tracking and trending activities were effective in communicating equipment status to management, but a lack of performance trending was noted for the large station batteries and the EDG batteries. A station deviation report involving EDG load sequencer timers was closed out without adequately evaluating the root cause, or providing corrective action to prevent recurrence. A lack of station input into the design process for the modification to the boric acid pump pressure instrumentation heat tracing resulted in the loss of several heat tracing circuits required by the Technical Specifications. Lack of an effective program for the evaluation of over-thrust conditions in motor operated valves resulted in a valve being declared operable with a thrust condition exceeding the valve manufacturer's thrust rating without sufficient justification. Lack of effective involvement by engineering contributed to a continued problem with the low head safety injection system relief valves lifting prematurely and a late evaluation of the safety consequences.

In most cases, maintenance engineering was used to resolve questions raised during the conduct of maintenance. One problem involved a motor operated service water valve exhibiting indications of impending failure during testing due to dried out packing. Lack of involvement by maintenance engineering resulted in failure to correctly diagnose the condition and the subsequent failure of the motor four months later. Maintenance engineering demonstrated a good working knowledge of the emergency diesels. This strength is reflected in the high reliability of the EDGs. The licensee had taken extra steps to monitor the condition of the EDGs by installing a solid state data acquisition system. This system is presently installed on one EDG. The monitoring system was used to diagnose current symptoms and to provide historical data for trending a wide range of EDG operating parameters. This system was considered a strength in the licensee's program for the monitoring and trending of EDG parameters.

The Motor Operated Valve Testing and Surveillance Program, in the early stages of implementation, was generally satisfactory and consistent with the recommendations of Generic Letter 89-10. Strengths were noted in the program relative to training, an 18-month frequency of preventive maintenance and diagnostic testing, and promptness in addressing the special case of motor operated butterfly valves. A minor weakness in scope was identified. Residual heat removal inlet isolation valves were omitted from the program based on the limited period and circumstances under which they might operate. The licensee subsequently agreed to include the valves in the program and to perform associated calculations, settings, and tests.

The outage management organization continued to perform well by effectively managing critical path activities, and clearly identifying those paths involved with work requiring priority treatment. Both refueling outages, conducted during the assessment period, were completed ahead of schedule with no significant events. Outage work included the successful completion of several modifications and numerous maintenance activities.

An Electrical Distribution System Functional Inspection identified numerous deficiencies in plant design basis documentation. The electrical equipment was observed to be well maintained and capable of performing its intended function. However, numerous calculations needed to demonstrate safety equipment design adequacy were missing, incomplete, or inadequate. Several design calculations indicated that some electrical equipment was underrated and no action had been taken at that time by the licensee to resolve the discrepancies.

Licensed operator training was effective, as evidenced by the initial and requalification examination results. During the assessment period, fourteen of fifteen candidates passed the Generic Fundamental Examination Section yielding a 94% pass rate. Early in the assessment period one initial examination was administered where eight ROs and eight SROs passed the examination for a pass rate of 100 percent. One requalification examination was administered late in the assessment period. All ten ROs, nine of ten SROs and all four crews passed. The Requalification Training Program was rated as satisfactory based on a 95% pass rate. One individual RO requalification retake examination was administered and satisfactorily completed during the assessment period.

Two violations were issued during the assessment period

2. Performance Rating

Category: 2

3. Board Recommendations

Technical support for procedure changes was not fully effective and contributed to problems in operations, maintenance, and surveillance. Management attention is needed to ensure that programmatic changes are accurately reflected in procedures, that modifications are properly evaluated for impact, and that procedure change backlogs are reduced.

G. Safety Assessment/Quality Verification

1. Analysis

This functional area addresses those activities related to licensee implementation of safety policies, license amendments, exemptions and relief requests, responses to Generic Letters, Bulletins and Information Notices, resolution of safety issues, reviews of plant modifications performed under 10 CFR 50.59, safety review committee activities, and use of feedback from self-assessment programs and QA activities.

Licensee management demonstrated a strong commitment to nuclear safety and QA during this assessment period. The licensee's organization and programs provided for several layers of independent review and assessment. These included the QA Department with programs at both the corporate and

station level, the Management Safety Review Committee and Corporate Nuclear Safety at the corporate level, and the Station Nuclear Safety and Operating Committee, Station Nuclear Safety and the Station Oversight Board at the station level. Both station and corporate management maintained a high degree of awareness and involvement in daily and longer term problems of the plant. Frequent tours by management personnel were conducted that often included a review of back shift activities. Systems for tracking projects and commitment dates showed improvements from the previous assessment period.

Through the Station Oversight Board, several initiatives were implemented. The quarterly "State of Nuclear Safety" assessment was derived from a number of performance indicators in areas such as key safety system availability, events which challenged operators or the plant, equipment failures, personnel errors and RCS integrity. The licensee also used the indicators for comparison with industry performance and significant industry issues. Departmental self-assessments were conducted periodically to identify areas needing improvement. The Station Oversight Board used inputs from these two primary sources to reach conclusions on overall station performance. The results of program, equipment and personnel performance were displayed on the Station Performance Annunciator Panel. This innovative program was visible to all levels of the organization and highly effective in focusing attention on performance weaknesses.

The licensee's efforts to enhance nuclear safety during plant shutdowns were particularly noteworthy during this assessment period. The licensee's main emphasis was to maximize the availability of equipment above the minimum required by the Technical Specifications and to minimize station activities during critical evolutions. Also, nuclear safety was enhanced by minimizing the potential for loss of decay heat removal and greater effort was made to ensure management cognizance of plant conditions and work activities in Modes 5 and 6. Initiatives directed at improving safety margins during outages included critical parameter monitoring and a weekly list of significant outage issues for management review.

Corporate management provided effective oversight and clear direction to ensure high levels of quality. A formal nuclear safety policy included objectives for safe plant operation and maintenance. The Management Safety Review Committee effectively performed its role to independently review station activities such as significant events, violations and findings. Committee members brought with them broad levels of experience, and meeting discussions focused on safety. Concerns raised by the Committee were tracked until adequate resolution was achieved. Corporate Nuclear Safety effectively incorporated operational experience into plant assessments including a detailed review of the station's electrical distribution safety functions. As a result of concerns early in the assessment period, management attention was placed on maintaining the UFSAR current and reducing the backlog of changes to be implemented.

The site QA organization was active in monitoring daily activities of the plant. Station management effectively used site QA to proactively assess program performance, to identify problems, and assess compliance in all areas. This was accomplished through two formal programs--audits and performance assessments. Site QA additionally identified underlying causes and recommended courses of action to potential problem indicators. An example of this included an effective review of operations personnel errors in which QA identified a lack of operating personnel understanding of management's self-checking expectations. One finding involved follow-up of discrepancies between drawings and valve lineup procedures. This led QA to identify numerous drawing update requests that had not been forwarded to the appropriate group for procedure revisions. The licensee implemented corrective actions to resolve this problem. Performance assessments were also conducted in response to weaknesses in surveillance implementation, motor operated valve maintenance, Technical Specifications amendment implementation, and relief valve maintenance. The use of technical experts during many audits/assessments added to the effectiveness of the effort. Audits by corporate QA in the areas of equipment qualification and engineering change control were critical, technically detailed, and identified several weak areas needing improvement.

The Station Nuclear Safety and Operation Committee acted prudently and conservatively in performing its duties of safety review over station activities. Frequent meetings were held to review procedures, tests, station changes, and deviation reports. The Committee remained sensitive to industry problems in such areas as fuel handling and electrical switchyard activities, and ensured that appropriate precautions existed in North Anna procedures. Corrective action assigned to deviation reports was generally good. One example included the formation of an investigation team to determine the cause of a hydrogen ignition event during welding on the charging system. The team identified several weaknesses, as discussed in the Maintenance/Surveillance area. Another example involved a task force established to resolve primary-to-secondary coolant leak rate monitoring discrepancies.

The Station Nuclear Safety Group directed the licensee's Root Cause Analysis Program for significant failures and events including reactor trip reports and human performance evaluations. In general, the reviews were thoroughly conducted with the concerns clearly identified and appropriate corrective actions recommended. The licensee's Deviation Report Program was strong. In most cases, problems were identified at a low threshold and were reported to management. One example revealed a problem in assuring that conditions (with the potential for rendering components inoperable) were properly reported for assessment. After a deviation report was submitted involving the EDG sequencer exhibiting drifting problems, the report was dispositioned without ensuring adequate corrective action to evaluate the significance and to preclude reoccurrence. This is further discussed in the Engineering/Technical Support area.

The licensee continued to demonstrate a high level of management involvement and control in assuring quality in licensing activities. The licensee actively pursued an aggressive and continuous upgrade in the Technical Specifications. This effort was substantiated by the number of Technical Specifications changes submitted on a continuing basis. The licensee actively supported licensing issues and resolutions that represent analyses or methodologies which have been first-of-a-kind. Specific examples were the submittals addressing service water and component cooling water Technical Specifications in Modes 5 and 6, as well as the clarification of the Technical Specification for vital busses in shutdown conditions. Also, as indicated in the previous assessment period, the licensee continued to support North Anna as the lead Westinghouse plant for the implementation of the new standard Technical Specifications. The licensee actively pursued an aggressive policy of quality control on proposed amendment changes including "no significant hazards evaluations" to assure that submittals to the NRC represented a quality product.

The licensee's management and staff maintained excellent liaison with the NRC staff. A common practice for the licensee was to expeditiously and personally report to the appropriate staff any unusual event, including those which occurred during non-working hours and weekends. Also, the licensee notified the staff well in advance of forthcoming requests for amendments or review of safety issues. The licensee made frequent visits to NRC to discuss forthcoming requests for staff actions prior to formal submittals which helped to assure compatibility with NRC regulations and criteria. In addition, when technical issues could be better addressed or complemented by site visits, the licensee was cooperative and provided the necessary staff to discuss appropriate matters.

No violations were issued during the assessment period.

2. Performance Rating

Category: 1

3. Board Recommendations

None

IV. SUPPORTING DATA

A. Major Licensee Activities

Unit 1 began the assessment period at full power. Power coastdown started on September 24, 1990 and continued until the unit shut down for refueling on January 11, 1991, completing a 352 day run. The scheduled 60-day outage was completed in 55 days. Significant SG tube plugging approached the 20% plugging analysis limit in the C steam generator; the unit was initially unable to achieve 100% power following the outage due to the number of tube plugs. Power reduction was required on May 5 to repair a

main generator exciter field coil. The unit was taken to cold shutdown on May 11 due to RCS leakage on the RTD bypass manifold and a weld failure on a loop stop valve disc pressurization line. The unit was again taken to cold shutdown on July 6 following a failure of the main condenser expansion joint. During this outage, repairs were made to a reactor coolant pump seal and additional leakage on the RTD bypass manifold was addressed. The reactor automatically tripped from 100% power on August 8 when the main steam trip valve closed spuriously. The unit returned to full power and continued at this level for the duration of the assessment period.

Unit 2 began the assessment period in a planned 75 day refueling outage. The outage was completed in 72 days. An automatic reactor trip occurred from 9% power upon initial start-up on November 2, 1990. The unit then operated at full power for most of the assessment period. Following 322 days of operation an automatic reactor trip occurred from full power on September 20, 1991 when a feedwater regulating valve failed closed. The unit operated at full power for the rest of the assessment period with the exception of a minor power reduction on September 26 to remove condenser water boxes from service and repair leaking condenser tubes.

The following organizational changes occurred during this assessment period:

November 1990, R. Saunders assigned as Assistant Vice President, Nuclear Operations.

November 1990, M. Bowling assigned as Manager, Nuclear Licensing and Programs.

November 1990, J. Stall assigned as Assistant Station Manager, Nuclear Safety and Licensing.

November 1990, J. Hayes assigned as Superintendent of Operations.

August 1991, M. Gettler assigned as Manager, Steam Generator Replacement Project.

August 1991, D. Schappell assigned as Superintendent of Site Services

August 1991, L. Hartz assigned as Manager, Nuclear QA

The following major modifications for both units were completed this assessment period:

AFW full flow recirculation piping
RCS level instrumentation installation
feedwater heater replacement

B. Major Direct Inspection and Review Activities

During this assessment period 29 inspections were conducted by resident and regional-based inspectors. This included major inspections to assess the licensee's MOV program and the electrical distribution system. Ten meetings were held with licensee management including one enforcement conference associated with operation of the service water system.

C. Escalated Enforcement Action

None

D. Licensee Conferences Held During Appraisal Period

September 21, 1990 - Meeting at Region II to discuss the licensee's Configuration Management Program and a presentation of safety assessment and automation enhancements at the North Anna Station.

November 7, 1990 - Meeting at North Anna Nuclear Information Center to present the SALP for the period from June 1, 1989 through August 31, 1990.

January 8, 1991 - Enforcement Conference at Region II on recirculation spray system operability.

January 30, 1991 - Meeting at Region II to discuss emergency preparedness plans and programs for both North Anna and Surry.

February 6, 1991 - Meeting at the licensee's Innsbrook Technical Support Center to discuss coordination of future NRC/licensee activities for both North Anna and Surry facilities.

March 15, 1991 - Meeting at Region II to discuss the status of the licensee's Design Basis Document Program and the Integrated Nuclear Safety Assessment Program.

July 24, 1991 - Meeting at Region II to discuss the licensee's self assessment for the North Anna Power Station.

August 1, 1991 - Meeting at NRC Headquarters to discuss the licensee's Inservice Test Program at both North Anna and Surry.

August 19, 1991 - Meeting at Region II to discuss emergency preparedness plans and programs for both North Anna and Surry.

October 9, 1991- Meeting at NRC Headquarters to discuss current licensing actions on going for North Anna.

E. Confirmation of Action Letters

None

F. Review of Licensee Event Reports (LERs)

During the assessment period, a total of 37 LERs were analyzed, one of which was a voluntary LER. The distribution of these events by cause, as determined by the NRC staff, is as follows:

Cause	Unit 1 or Both	Unit 2	Totals
Component Failure	4	2	6
Design	0	2	2
Construction, Fabrication or Installation	1	0	1
Personnel Error			
- Operating Activity	5	3	8
- Maintenance Activity	2	0	2
- Test/Calibration Activity	7	5	12
- Other	1	0	1
Other	2	2	4
Total	22	14	36

Note 1: With regard to the area of "Personnel Error," the NRC considers lack of procedures, inadequate procedures, and erroneous procedures to be classified as personnel errors.

Note 2: The "Other" category is comprised of LERs where there was a spurious signal or an unknown cause.

Note 3: One voluntary LER was received. This LER is not counted in the above tabulation.

G. Licensing Activities

A tabulation of licensing actions is as follows:

Active actions at beginning of period (09/01/91)	42
Actions added during period	52
Completed actions during the assessment period	43
Active actions at end of period (10/31/91)	51

The 43 actions completed during this assessment period can be divided into two major categories. The number of actions which were completed for each category are:

Plant-specific actions	35
Multi-plant actions	8

H. Enforcement Activity

FUNCTIONAL AREA	NO. OF VIOLATIONS IN SEVERITY LEVEL V	IV	III	II	I
Plant Operations	0	4	0	0	0
Radiological Controls	0	2	0	0	0
Maintenance/Surveillance	0	3	0	0	0
Emergency Preparedness	0	0	0	0	0
Security	0	0	0	0	0
Engineering/Technical Support	0	2	0	0	0
Safety Assessment/ Quality Verification	0	0	0	0	0
TOTAL	0	11	0	0	0

Note: The above tabulation does not include the potential violations in the Electrical Distribution System Functional Inspection Report (50-338,339/91-17).

I. Reactor Trips

UNIT 1

August 8, 1991, Unit 1 experienced a safety injection and a reactor trip from 100% due to a closure of one main steam isolation valve. A corrosion/water mixture in a junction box caused a relay to energize one of the solenoids that vents off the air cylinder that holds the valve open. The unit returned to power on August 9, 1991.

UNIT 2

On November 2, 1990, Unit 2 restarted after a refueling outage. At 9 percent power an automatic reactor trip occurred when operators lost control of SG level initiating feedwater isolation, and subsequently failed to properly reset feedwater. After completion of corrective action, the unit restarted later that day.

On September 20, 1991, Unit 2 had a reactor trip with safety injection caused by failure of a driver card in the "B" feedwater regulating valve control circuit.