# SYSTEMATIC ASSESSMENT OF LICENSEE PERFORMANCE REPORT CATAWBA NUCLEAR STATION 50-413/97-99 AND 50-414/97-99

#### I. BACKGROUND

The SALP board convened on May 12, 1997. to assess the nuclear safety performance of the Catawba Nuclear Station for the period October 8, 1995, through April 26, 1997. The board was conducted in accordance with Management Directive 8.6, "Systematic Assessment of Licensee Performance." Board Members were Johns P. Jaudon, Director, Division of Reactor Safety (Board Chairperson); Bruce S. Mallett, Acting Deputy - Regional Administrator; Jon R. Johnson, Director, Division of Reactor Projects; and Herbert N. Berkow, Director, Project Directorate II-2, Office of Nuclear Reactor Regulation. This assessment was reviewed and approved by the Regional Administrator.

### II. PLANT OPERATIONS

This functional area assesses the control and execution of activities directly related to operating the plant. It includes activities such as plant startup, power operation, and response to transients. It also includes initial and requalification training programs for licensed operators.

The previous SALP assessment noted good overall performance in Plant Operations with challenges related to human performance in tagging and Technical Specification interpretations, management oversight and involvement with in-plant activities, the quality of self-assessments, and Plant Operations Review Committee involvement in special operations.

During the current assessment period, performance in the area of Plant Operations was superior with a significant improvement early in the period that has been sustained. This performance improvement was demonstrated most noticeably by the reduction of the number of plant transients, especially automatic plant trips from power, sitewide improvement in the operational safety focus of the station staff, and the effective use of self-assessments and benchmarking.

Operator performance in response to the automatic plant trip associated with the Unit 2 loss of offsite power was superior. Performance by operators during steady-state operations, refueling outages, and maneuvering for forced outages and power reductions was generally very good and included no significant operator errors. This performance indicated effective licensed operator training in plant transients, as well as technically adequate Abnormal Operating Procedures.

Plant Operations' written and oral communication practices were not consistent. Operator logs were limited in detail and did not provide sufficient information on certain equipment status. Corrective actions taken late in the period improved the detail in these logs.

Enclosure

9706120201 970604 PDR ADOCK 05000413 0 PDR Announcements of equipment status changes and repeat back communications of specific plant parameters were not consistently used. particularly during simulator scenarios for requalification training. On occasion, the causes of alarm conditions were not aggressively questioned. Notwithstanding these inconsistencies, the operator requalification and initial license programs had successful results, as reflected by the 100 percent pass rate on initial operator examinations during the period. Just-in-Time training was effectively utilized by Operations for infrequently performed evolutions.

A strong, sitewide operational safety focus was demonstrated by the station staff. Decision-making that demonstrated maintaining operational margin was exhibited throughout the assessment period. These decisions voluntarily delayed unit startups, prompted unit forced outages, or delayed refueling activities on several occasions for the purpose of maintaining operational safety margin when equipment or procedure issues occurred. The Top Equipment Problem Resolution Process was effective in establishing the priority of degraded component problem resolution from an operational perspective.

Management observations of on-going activities, self-assessments, and benchmarking activities were effectively performed. As a result of these self-critical activities, reinforcement of expectations for human performance improvement, enhancements to control room work scheduling, and improvements to the control room environment were implemented.

Human performance errors that impacted plant operations were significantly reduced compared to the previous assessment period. This improvement was attributable to the licensee's "Flawless Human Performance" program, which was introduced in the latter part of the last assessment period and has been consistently reinforced through the current assessment period. Although the number of significant errors declined, deficiencies in procedure adequacy, primarily attributed to spent fuel pool and residual heat removal system operation, indicate that this is an area for management attention.

The Plant Operations area is rated Category 1.

#### III. MAINTENANCE

This functional area assesses all activities associated with diagnostic. predictive. preventive. and corrective maintenance of plant structures, systems, and components, and maintenance of the physical condition of the plant. It also assesses the conduct of surveillance testing. inservice inspection and testing. instrument calibrations, equipment and system operability tests, post-maintenance testing, post-outage testing, containment leakrate testing, and special tests.

The Maintenance program had a strong operational focus. As a result, support to Operations was very good. The maintenance work control

process, a challenge area in the previous period. was significantly improved and was characterized by a low corrective work order inventory. improved schedule efficiency, and enhancements in the Critical Maintenance Process and the System Work Window Process. The control room professional environment improved due to better focus by both Maintenance and Operations. Maintenance activities were routinely scheduled to cause little or no disturbance to control room operations.

The licensee has expanded use of multi-discipline work teams. The effective use of the current five standing SPOC (single point of contact) teams and several specialty teams for air conditioning and ventilation, vibration, diesel generator etc., contributed to improved overall equipment performance.

Availability of key safety systems was better than the licensee's targets in all cases. This reflected good Maintenance support to Operations and Engineering. The licensee effectively employed the Failure Analysis and Trending System for predictive maintenance. comparing actual component failure rates with those industry-wide and making adjustments.

The licensee significantly reduced the backlog of maintenance work orders during this period, due to an emphasis on focus, accountability, and ownership of maintenance activities. As a result, the low backlog also contributed to the lower number of operator workarounds.

The licensee effectively performed several dozen maintenance selfassessments, resulting in numerous identified problems and implemented improvements. The self-assessments were focused on rework, job observations, plant material conditions, radiation dose/contamination events, and non-routine issues identified by third-party audits.

Equipment failures continued as a challenge during this period. notwithstanding the licensee's continued efforts to improve equipment reliability. Such failures caused a number of power reductions, forced outages, and an automatic reactor trip at power. In particular, there were a significant number of motor failures. The licensee had recognized this trend and was taking actions to assess the root cause.

Procedural inadequacy resulted in a number of maintenance-related problems during this assessment period. This issue continued to be a challenge at the end of the period, indicating an area for further management attention.

An NRC inspection of the licensee's implementation of the Maintenance Rule showed that the licensee's program was good except for one area, as noted in the Engineering section of this report. Noteworthy areas of the program included corrective actions implemented for systems captured under section (a)(1), Goal Setting and Monitoring, of the Rule, and the good quality of audits, assessments, and resultant corrective actions.

Problems in the area of secondary piping welding were highlighted during the Unit 1 steam generator replacement. Lack of management oversight and standards for completed work were the main causes of problems. These issues were subsequently addressed through implementation of recommendations from the licensee's Welding Quality Improvement Team.

The Maintenance area is rated Category 2.

### IV. ENGINEERING

This functional area assesses activities associated with the design of plant modifications and engineering support for operations, maintenance, surveillance, and licensing activities.

Overall performance in the Engineering area has been superior. Modification implementation and design control performance including modifications to systems associated with the Steam Generator Replacement Project were effectively implemented. The last SALP assessment had noted that Engineering support to Operations was uneven. During this assessment period, Engineering support to Operations improved significantly.

The Engineering self-assessment process was excellent. The number of self-assessments increased, and the depth and focus of assessments improved. This resulted in improving the overall performance of the Engineering area.

The licensee's performance with respect to 10 CFR 50.59 evaluations was good and improving. The program used followed industry guidance, and the licensee implemented additional management oversight of the process to assure NRC requirements were met. The reviews completed in conjunction with the steam generator replacement were superior.

Engineering performed well on two major engineering projects completed during this assessment period: these were the Steam Generator Replacement Project and Generic Letter 89-10 Motor-Operated Valve program. Control. planning, and implementation of the steam generator replacement project were superior and demonstrated excellent interfaces among plant organizations. The Catawba motor-operated valve program scope was considerably larger than the industry average. Additionally. the licensee was an industry leader in resolving motor-operated valve problems. Although Engineering was knowledgeable of the Maintenance Rule. a weakness was noted in the area related to assessing risk for out-of-service equipment.

The quality of licensing submittals ranged from good to superior. The strongest area of performance was the engineering activity in support of the Unit 1 steam generator replacement project. The group dedicated to this project produced numerous high quality licensing documents to support the license amendments needed for plant operation with the

replacement steam generators. The licensee's prompt and quality submittals led to technically well-based license amendments.

The Engineering area is rated Category 1.

# V. PLANT SUPPORT

This functional area assesses activities related to the plant support function, including radiological controls, radioactive effluent and radiation waste, chemistry, emergency preparedness, security, fire protection and housekeeping programs.

In contrast to the previous assessment period, licensee management and staff controlled radiation dose to as low as reasonably achievable (ALARA). There were low individual and collective radiation doses for the site due to individual and line management accountability. Performance to control radiation source terms during the steam generator replacement was superior. The licensee improved the program and procedures to control contamination during outages from the previous assessment period. As a result, contamination control practices were very good and often superior for routine programs and most areas were accessible to operations personnel. Management and staff executed the routine radiation control program with excellent control of radioactive materials. There were only isolated examples where sufficient precautions were not taken.

Radiological effluent and radiation waste programs continued to provide effective controls, resulting in the release of extremely low levels of radioactive materials into the environment. Monitoring equipment was maintained at a high level of operability as a result of proactive efforts to identify and correct problems promptly.

Water chemistry was controlled such that key primary and secondary system parameters remained well below established limits throughout the assessment period. The chemistry staff provided superior support for Operations in preparation for outages. There were some examples where the interface with Operations was lacking during outages.

The emergency preparedness program was superior in most areas. Management and staff were aggressive in performing exercises and drills to enhance performance. The training program for emergency response staff was strong. Performance in response to drill scenarios and events was technically good with a few isolated problems in communications early in the period. The licensee was diligent in monitoring equipment and staff capabilities to maintain emergency preparedness.

Implementation of the fire protection program for equipment and procedures was generally effective. Strong attention to the maintenance of equipment resulted in a very low incidence of degraded or inoperable fire protection components. Fire brigade performance was superior.

The security performance was superior throughout the assessment period. The daily programs were proactive in identifying, trending and correcting problems. The testing and maintenance of equipment was a strength. There was a strong program in planning for and actual response to events; this was effectively demonstrated during the NRC's Operational Safeguards Response Evaluation.

Self-assessments and audits were strong in all areas. The assessments were thorough, complete, and focused on safety in the audit areas. Corrective actions were timely and effective in addressing the identified problems. Root cause analysis was effective in evaluating and resolving problems throughout the assessment period.

Training program performance was outstanding in all areas. Training for radiological controls during the steam generator outage was excellent and emphasized safety. Superior training was a significant contributor to successful performance by emergency preparedness and security staffs and management for routine activities and response to events or exercises.

Housekeeping during some significant work periods in containment and other less frequented areas was poor. This detracted from the good cleanliness exhibited in most areas during routine operations.

The Plant Support area is rated a Category 1.