

# SYSTEMATIC ASSESSMENT OF LICENSEE PERFORMANCE REPORT

## SUMMER NUCLEAR PLANT

50-395/96-99

### I. BACKGROUND

The SALP board convened on November 13, 1996, to assess the nuclear safety performance of the Summer Nuclear facility for the period January 29, 1995, through October 26, 1996. The board was conducted in accordance with Management Directive 8.6, "Systematic Assessment of Licensee Performance." Board Members were J. R. Johnson (Board Chairperson), Deputy Director, Division of Reactor Projects, A. F. Gibson, Director, Division of Reactor Safety, and F. M. Reinhart, Acting Director, Project Directorate II-1, Office of Nuclear Reactor Regulation. This assessment was reviewed and approved by the Regional Administrator.

### II. PLANT OPERATIONS

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

Overall performance in the Plant Operations area remained superior during the assessment period. Unit performance was characterized as a very stable period of power operations with relatively few transients, no plant trips, generally conservative decision making, and a good focus on safety.

Operator performance was very good during the relatively few shutdowns and startups conducted. A special steam generator moisture carry over test was well controlled. Senior Reactor Operators demonstrated excellent supervisory skills, and strong operator knowledge and ability was demonstrated during plant evolutions as well as during requalification training. Rotation of licensed control room operators to auxiliary building tours was effective. Auxiliary building operators were thorough in monitoring and recording system parameters during their rounds and were generally knowledgeable of their duties.

Performance during in-plant fuel handling and tagging activities and in response to support system panel alarms remained a challenge. Locked-in alarms on the control room HVAC panel and untimely resolution of a fuel handling building differential pressure condition demonstrated a need to improve questioning attitudes. Self-verification programs were

ENCLOSURE

generally adequate; however, two significant events during the most recent refueling outage indicated a need for improved self-checking to assure operation of designated equipment and to assure completeness of procedures prior to use.

Plant operations management demonstrated a commitment to assessing plant risk during planning and scheduling activities as well as during special system configuration in a refueling outage. Station management provided excellent risk information in the control room in the form of operator aids listing special refueling conditions, abnormal operating procedures, applicable boration flow paths, and time-to-boil in the spent fuel pool. Management provided the operations staff a "safety function matrix" to assist shift supervisors and the operations scheduling staff to evaluate the impact on plant risk of approving preventive maintenance activities on-line.

Operations management demonstrated a conservative approach to unit operational decisions. Technical Specification Limiting Conditions for Operation were properly entered when equipment was degraded and during a critical temporary system realignment. Power reductions were conducted prior to several planned maintenance activities as a contingency to assure that reactor conditions would remain stable if secondary plant transients occurred. A station wide standdown was conducted to review safety procedures as a preventative measure and not in response to any special event.

Operational procedures and programs were fundamentally sound and resulted in good adherence. Operator workarounds were well managed with causes and corrective actions identified, responsibilities assigned, and completion dates scheduled.

Management self-assessment activities were generally effective. Monthly operations monitoring included a trend of personnel errors by shift and a performance annunciator panel assessment of personnel, program, and equipment performance indicators. Support for benchmarking observations by other utilities was strong and the licensee was active in initiatives with other utilities to learn and share good practices. This was demonstrated by several rotations in management positions, implementation of good practices from other utilities, and a human performance critique of a wrong component operation by an outside utility.

The Plant Operations area is rated Category 1.

### III. MAINTENANCE

This functional area includes activities associated with diagnostic, predictive, preventive, and corrective maintenance of plant structures, systems and components; maintenance of the physical condition of the plant; and training of the maintenance staff. It also includes surveillance testing, in-service inspection and testing, instrument

calibration, operability testing, post-maintenance testing, post-outage testing, containment leak rate testing, and special testing.

Management demonstrated strong commitment to and support of maintenance activities. Coordination with Engineering to resolve related technical issues was excellent. Overall, the licensee demonstrated superior performance in implementing the station maintenance program and in resolving related technical issues.

Diagnostic, preventive, and corrective maintenance was well performed in that resolution of technical issues and actions to repair heat exchanger head flange leaks on the residual heat removal and spent fuel pool cooling systems were effective.

The licensee continued their excellent performance in inspection and testing programs. Surveillance activities were planned, conducted in a professional manner, and resulted in a high degree of confidence that the tested components would perform as designed. In addition, surveillance activities satisfactorily demonstrated equipment operability. In-service inspection and testing programs were effectively implemented. Instrument calibrations were performed within required calibration due dates. Outage and post-maintenance testing was performed well, especially with regard to station modifications to accommodate an approved power uprate accomplished during the last refueling outage in the Spring of 1996. Containment leak rate testing was well performed on containment penetrations. The containment purge supply and exhaust isolation valves, with resilient seals which require frequent testing, were well within the leakage acceptance criteria.

The licensee provided strong supervision, and technicians demonstrated aggressive questioning attitudes. Work packages were thorough and complete, and the backlog of work items was well managed.

Self-assessments, root cause analyses, and trending remained strong and effective. In this regard, an excellent licensee initiative replaced the Off-Normal Occurrence reporting system with an in-depth Condition Evaluation Report system that focused on system trending. These trends will be evaluated by quality assurance personnel.

Maintenance personnel performing work were experienced, well trained, and very knowledgeable of plant procedures and equipment. Work areas were orderly and well maintained. Material stored in maintenance storage areas was properly identified and protected. Working relationships within the maintenance department and among other departments were supportive and constructive.

Plant management at all levels was well versed on the details of the maintenance rule. Personnel were able to demonstrate comprehensive knowledge of the rule in their appropriate area of responsibility. In support of the maintenance program, as an excellent initiative, the licensee developed a "safety function matrix" to assist in evaluating and managing the impact of on-line maintenance with regard to plant

safety. The matrix helped to maximize plant safety by managing the combinations of equipment simultaneously taken out-of-service on each train and by preventing planned simultaneous work on opposite trains.

While maintenance procedures were generally of high quality, attention to detail in using and revising the procedures was a challenge.

While the material condition of the plant was good, additional challenges included reducing some water and oil leaks.

**The Maintenance area is rated Category 1.**

#### **IV. ENGINEERING**

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

The licensee's performance in the areas of design control and maintenance of the licensing basis was strong. The engineering workload was well managed, the turnover of design activities previously performed by their primary architect/engineer was well planned, and procedures for reviewing changes to the facility were sufficiently detailed to ensure compliance with 10 CFR 50.59. An Engineering Design Control Board was established and was effective in prioritizing design changes and disseminating design information to the appropriate staff. Several errors in the design control process were identified by the licensee. Root causes were identified and appropriate corrective actions were implemented. This performance was a noted improvement over the last SALP period.

Engineering provided effective support to Plant Operations. Challenging design issues, including high moisture carryover from the new steam generators and an unexpected neutron flux tilt, were resolved to improve plant performance. The backlog of engineering work was well managed enabling timely response to problems identified by operators. Operator workarounds were aggressively pursued.

Maintenance problems were resolved in a timely manner. Engineering worked closely with Maintenance on several design changes that improved plant reliability. Problem identification and root cause analysis of equipment issues supported timely, effective resolution.

The licensee's performance in the area of self-assessment directed toward engineering was good. The Engineering organization initiated frequent contacts with other licensees to identify opportunities for improved performance. The Quality Assurance organization contributed by performing an in-depth audit of the design control program.

Technical engineering submittals made to the NRC were of high quality with well prepared safety evaluations.

The Engineering area is rated Category 1.

#### V. PLANT SUPPORT

This functional area addresses all activities related to the plant support function, including radiological controls, radioactive effluents, chemistry, emergency preparedness, security, fire protection, and housekeeping.

The radiological control program was effective in protecting the health and safety of plant workers and members of the public. The onsite radiation protection program controlled internal and external radiation exposures below regulatory limits. Site ALARA and personnel contamination control measures were generally successful throughout the period although some decline was noted. Specifically, contamination and contaminated material were found outside control boundaries. Control of contaminated material is a challenge.

Offsite radiation exposure to members of the public was substantially below regulatory limits. The environmental monitoring program confirmed effective effluent controls in that only trace amounts of radioactivity were detected in the environs of the plant.

Effective chemistry programs were implemented to inhibit degradation due to corrosion of components in both primary and secondary systems. The program for handling, packaging and transport of radioactive materials functioned very well.

The emergency preparedness program was generally effective in maintaining site readiness to respond to emergencies. However, actual response indicated some decline in performance. Challenges were noted in developing challenging emergency exercise scenarios and in maintaining awareness of siren system status in order to make timely reports. Several improvements were made to the Alert and Notification System sirens to make them more reliable. Preparations for a hurricane minimized the risks and potential damage to plant facilities from rain and high winds.

The licensee continued to implement and support the Physical Security Plan, procedures and associated programs in an outstanding manner. The security program was strong and well managed. The protected area access control equipment was reliable and effective. Station management was active in identifying and correcting potential problems.

The Fire Protection program performance declined but was generally implemented in an adequate manner during this period. Human performance errors persisted throughout the period and caused deficiencies in the implementation of the program. Maintenance and testing of fire

protection systems were satisfactory. Organization and staffing changes were made late in the period in a effort to improve performance and some improvement was evident. Quality assurance audits were thorough and corrective actions were timely. Housekeeping was satisfactory but additional improvements could be made in some areas.

The Plant Support area is rated Category 2.