

SYSTEMATIC ASSESSMENT OF LICENSEE PERFORMANCE REPORT
OCONEE NUCLEAR STATION
50-269/97-99, 50-270/97-99, AND 50-287/97-99

I. BACKGROUND

The SALP board convened on December 1, 1997, to assess the nuclear safety performance of the Oconee Nuclear Station for the period May 5, 1996, through November 15, 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; Loren R. Plisco, Deputy 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.

Overall performance in the area of Plant Operations during this assessment period was good. Operator performance during the numerous plant startups and shutdowns was professional, and the evolutions were well managed and controlled. Operator response during plant transients, automatic reactor trips and runbacks, forced shutdowns, and off-normal conditions was prompt and effective. Operational decisions were typically conservative and appropriate.

Complex, non-routine evolutions were thoroughly planned, well coordinated, and methodically controlled. The appropriate level of management involvement was evident in risk-significant evolutions such as mid-loop operation and special tests.

Procedure adherence and procedure quality issues provided challenges during this period. Operating procedure deficiencies and the failure to follow procedures by Operations personnel contributed to several operational events during the period. Other specific areas of weakness identified during the period included control room logkeeping practices.

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operator monitoring of reactor coolant system inventory changes, and operator examination preparation.

Weaknesses identified during the previous assessment period regarding fuel handling and event report timeliness and quality have shown improvement during this period. Configuration control issues have also shown improvement with respect to the number of issues; however, there were several significant mispositioning events during this period that indicated continued challenges in this area.

Self-assessment activities have been thorough and effective, especially during the last six months of the period. Evaluations were completed in the areas of communications, procedures, and configuration control that recommended comprehensive corrective actions for identified weaknesses.

The Plant Operations area is rated Category 2.

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.

Overall, performance in the Maintenance area and support to Operations and Engineering continued to be good during this period. Management involvement, training, and backlog management continued to be program strengths. The licensee addressed previously identified challenges and improvement was noted, particularly in the effectiveness of corrective actions and self-assessments. Other areas such as plant equipment reliability, procedures, and human performance continued to be challenges. A safety-conscious attitude was evident in maintenance activities.

A large number of significant maintenance activities were completed during the period, and most were implemented with high quality, skill and good planning by well-trained and highly qualified personnel. The

maintenance training program has been enhanced to add more structure and depth.

Strong management support for maintenance activities continued, both from the Oconee site and from Duke's General Office. This was evidenced by funding support for physical improvements, supervisory and management presence, and organizational and programmatic enhancement initiatives.

A number of events during the period indicate that both primary and secondary system equipment was continuing to degrade with a high failure rate. Some of these failures and degradations had roots in maintenance program weaknesses in prior years. Oconee management has been addressing the issues, and, while there was no indication of a pervasive material condition problem, equipment reliability continues to be a challenge as the plant ages.

The licensee made efforts to address previously identified deficiencies in adherence to and quality of maintenance procedures. Despite the significant focus on improving overall human performance, there were many examples where personnel error, lack of attention to detail, failure to follow procedures, or procedural inadequacies challenged system operability and adversely impacted operations and personnel safety.

Self-assessment capability and effectiveness in the Maintenance area improved during this period as a result of several licensee initiatives and development of indicators to measure the performance and health of the organization.

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.

Engineering performance in the area of self-assessment was mixed. Corrective action for problems that were self-identifying was usually strong. Frequently though, problems were not identified and resolved prior to becoming self-revealing. This was reflected in the operating

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history of the three units during the assessment period, which revealed that many of the operational transients experienced had roots in engineering issues.

There were several examples in which Engineering had failed to incorporate technical requirements into plant procedures or programs. These were manifested as inadequate followup on older, generic issues. The failure to implement adequate corrective actions in the area of non-destructive examination of high pressure injection nozzles resulted in a failure to detect the initial indications of a through-wall pipe crack before it occurred on one unit and a failure to identify degraded conditions on an injection nozzle of another unit. There were other, less significant examples, but taken as a whole they represented a decline in Engineering performance.

Design control was assessed as good in some areas, but with problems in other areas. The upgrade of the low pressure service water system was an example of the former, as was the technical work done in support of the one time testing of the emergency power system. There was an instance in which a modification to the emergency power supply system was done outside the modification process, resulting in no post-modification testing.

Engineering support for implementation of the maintenance rule was good. The knowledge of system engineers was a strength, and the program to have them conduct periodic walkdowns of assigned systems was also a strong point. There were some weaknesses manifested in other areas of maintenance support.

The Engineering area is rated Category 2.

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.

Programs for personnel radiation exposure control continued to exhibit strong performance in reducing collective site radiation dose. Day-to-day radiation controls were effective in notifying workers of radiation

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hazards, restricting access to high radiation areas and monitoring for radioactive material leaving the radiation controlled areas in most instances. The problem with workers not following procedures when monitoring for contamination upon leaving radiation controlled areas as noted in the previous assessment period was reduced to only a few instances during this period. Proactive steps resulted in the reduction in the total number of personnel contamination events; however, there continued to be a challenge in contaminations resulting from areas designated as "clean" from radioactive contamination.

Management and staff attention and involvement in the control of radioactive effluents and radioactive waste maintained releases to the environment that were well below NRC regulatory limits. Performance continued at a superior level in the areas of radiation monitor operability and the environmental monitoring program.

The primary and secondary water chemistry program continued to maintain key parameters well within Technical Specification limits. Management and staff were aggressive in seeking ways to aid operations in reducing the radiation source term at the site.

In the emergency preparedness area, staffing qualifications, activation of emergency response facilities and response to actual events continued with superior performance. Training was particularly noteworthy and a significant contributor to good command and control, classification of events, interface and notifications to offsite response agencies and technically sound response to the safety aspect of actual events and exercise postulated events.

Fire prevention and protection implementing procedures were well written and supported excellent performance with the exception of fire fighting procedures for the fire brigade in some safety-related areas. Staffing and training of the fire brigade organization resulted in good performance during drills with the exception of performance during a drill late in the assessment period. Attention to equipment maintenance resulted in good material condition and a relatively low number of degraded fire components. Staff and management were aggressive in identifying and correcting deficiencies. In addition, general housekeeping continued to be good.

Audits and corrective actions to identified problems were thorough and

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contributed to a superior level of performance in the area of security. Security staff training and qualifications were superior. Security-related equipment performed as designed with minimal problems due to proactive steps to keep it maintained and resolve problems. Root cause analysis of events was a strength and resulted in prevention of recurring problems, with the exception of nuisance alarms on perimeter detection equipment. Routine security programs provided effective controls throughout the assessment period. An Operational Safeguards Response Evaluation conducted in May 1997 identified significant problems that were verified to be corrected during subsequent evaluations. Improvements were noted in corrective actions for problems noted in the previous assessment period in the areas of access authorization and control of safeguards information.

The Plant Support area is rated a Category 1.