

SYSTEMATIC ASSESSMENT OF LICENSEE PERFORMANCE REPORT
MCGUIRE NUCLEAR STATION
50-369/95-99 AND 50-370/95-99

I. BACKGROUND

The SALP Board convened on August 30, 1995, to assess the nuclear safety performance of McGuire Nuclear Station for the period February 6, 1994, through August 12, 1995. 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; J. P. Jaudon, Deputy Director, Watts Bar Project; B. S. Mallett, Director, Division of Radiation Safety and Safeguards; and H. 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 addresses the control and execution of activities directly related to operating the plant. 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 station performance in plant operations was good. The station experienced relatively few reactor trips or major unplanned transients. Those few which were experienced were handled well by the on-shift operations crews. Station management attention to, and prioritization of, several long-standing maintenance issues and operator workarounds observed during the last assessment period were effectively addressed, contributing to a reduced number of plant and operator challenges this period.

Control room command and control has improved, indicating effective correction of weaknesses observed during the last assessment period. Operator response to annunciators has been prompt, communications have improved, and good access control has been maintained to the control room "at the controls" area. Use of a round-the-clock work control center staffed by a senior reactor operator has aided in maintaining the control room in a professional manner and keeping distractions to a minimum. Conservative operational decisions were demonstrated. Continued implementation of the control room panel overlay mimic modification and upgraded emergency operating procedures enhanced the operators' ability to control the plant.

The improved performance on operator license examinations noted during the previous assessment period was not sustained. Accordingly, the licensee increased management involvement in the examination process, as well as in classroom observation. Additionally, observations of in-plant activities by the operations and training staffs were implemented. Improved communications and command and control resulted from increased

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operations management involvement, as well as reinforcement during requalification training sessions in the simulator.

Deficiencies in control of in-plant evolutions affecting core and spent fuel pool reactivity resulted in several challenges to control room operators. These events, which involved activities outside of the control room and non-operations organizations (e.g., maintenance and chemistry), indicated deficiencies in coordination and overall control of plant systems which can affect primary plant reactivity. Licensee management initiated actions to increase management attention, as well as improve cross-disciplinary evaluation of plant procedures.

Weak oversight, coordination, and interfacing with respect to some station activities led to component mispositionings. This resulted in degraded system performance, reactivity management challenges (as discussed above) and in some cases, plant transients. Operations management took several steps during the latter part of the period to assure proper system configuration. In addition, daily and weekly plant status and work planning meetings were held, and several industry benchmarking activities have recently been conducted to improve the operational safety focus on station activities.

Management involvement in prioritizing station work and interfacing with the maintenance and technical support organization has improved since the last assessment period. The licensee's "Top Equipment Problem Resolution" meetings have been effective in prioritizing repair of operator workarounds and other equipment problems. Operations management also provided weekly expectations to the operations staff in order to highlight recent strengths and weaknesses. Lessons learned were emphasized and reinforced during requalification training sessions attended by operations management.

Licensee assessments have focused station management's attention on areas needing improvement. Although several were reactive in nature, these assessments identified the need for new non-licensed operator training classes, improved performance in component positioning and tagging, reactivity management, and emphasis on the "Top Operations Issues List."

The Plant Operations area is rated Category 2.

III. MAINTENANCE

This functional area addresses activities associated with diagnostic, predictive, preventive and corrective maintenance of plant structures, systems and components. It also includes all surveillance testing, inservice inspection and other tests associated with equipment and system operability.

During this assessment period, licensee management responded to the significant maintenance challenges identified in the previous period. Management took a number of significant process and organization

initiatives. Overall, there have been considerable improvements in maintenance performance and in resulting plant reliability.

The licensee has pursued the use of comprehensive and objective self-assessments to periodically evaluate maintenance performance, particularly in the areas of problem identification and corrective action. One previously weak area, which has particularly benefited from corrective actions taken in response to self-assessments, is the foreign material exclusion program.

The licensee continued to implement a predictive maintenance program incorporating state-of-the-art techniques. Through this program, several system and component failures were predicted and precluded. The licensee has also undertaken a Preventive Maintenance Optimization Program, which is intended to optimize preventive maintenance on equipment important to safety and availability of the plant.

The excessive maintenance work order backlog, which existed throughout much of the prior assessment period and in the early part of this period, has been effectively managed, and virtually eliminated, by a Work Order Reduction Team. However, the licensee's efforts have not been fully effective in preventing a recurrence of the problem. Overall, there has been significant improvement during the latter part of this period, but continued improvements in work control and backlog management remain challenges.

Recognizing that deficiencies in human performance have been the root cause of many maintenance and plant performance problems, the licensee has pursued resolution of the problem during this period. The licensee has used their Maintenance Self-Assessment Program, Problem Identification Process, work habit training and consultant assistance to understand the causes of the problems and to identify improvement initiatives. Human performance has improved during this assessment period, but remains a challenge to management.

The plant material condition was minimally acceptable during the last assessment period and early in the current period. The licensee committed resources to support and supplement several programmatic initiatives. As a result, improvements in plant material condition have been noted. Nevertheless, a number of deficiencies still exist and continued improvements remain a challenge.

The Maintenance area is rated Category 2.

IV. ENGINEERING

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

Performance in the area of design control was good. The licensee's initiative to validate the plant's design basis progressed well. The licensee successfully reduced the number of temporary modifications and eliminated a significant backlog in drawings requiring revision. Design related deficiencies associated with some modifications impacted on plant safety. A number of these deficiencies occurred during previous assessment periods but were not found until this period. The engineering staff provided a strong response in dealing with these issues. Additionally, licensee activities to improve control of vendor technical information were effective.

Support to the operations and maintenance organizations improved over the assessment period and was considered superior during the last six months of the period. The engineering attention on resolving plant issues while retaining an appropriate focus on responsibility for safety contributed materially to improved plant performance and the reduction in the number of operational challenges. The use of "top ten" and "work arounds" lists of operational equipment problems served to focus management attention and resources on operational problems. It also resulted in an improved material condition of the plant. As engineering support remains essential in the Top Equipment Problem Resolution Process, this area continues to present a challenge. Engineering decision-making was conservative and effective in assisting operations. Engineering managers met with operations and maintenance managers regularly, thereby, establishing direct and close coordination. The number of back-logged work orders awaiting engineering action was reduced significantly, thereby providing effective service to maintenance.

Self-assessments were effective in identifying strengths and challenges in engineering performance. Measurement of functional objectives was accomplished quarterly, and several evaluations of special aspects of engineering performance were made as the need for them was recognized. Corrective actions for identified deficiencies were controlled through the Problem Identification Process.

Licensing submittals have generally been of high quality. The licensee promoted good communications and was well prepared for meetings held to facilitate licensing issues.

The Engineering area was rated Category 1.

V. PLANT SUPPORT

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

Programs to self-identify problems were strong in all areas. The licensee continued to have good planning for audits with findings leading to improvements. Line organizations were responsive to findings; as a result, issues were resolved in a timely manner.

Training programs were excellent and there were well-qualified staff in all areas. Workers were knowledgeable of duties and there was an aggressive program to use lessons learned and identify areas where there were training deficiencies.

There was a strong program for tracking and controlling radiation dose. The licensee's As Low As Reasonably Achievable (ALARA) Committee set challenging dose limit goals which were effectively met. Strong management support continued for ALARA initiatives and efforts to reduce the radiation dose source term. There was excellent use of lessons learned training to aid in a significant reduction of radiation dose to workers during refueling outages.

Management effectively corrected problems noted with radioactive material controls early in the assessment period. Contamination controls in most areas were good with excellent control in areas reclaimed. There was thorough followup of personnel contamination events.

Radiological effluent and chemistry programs were implemented well throughout the assessment period. There was a strong commitment to maintaining chemistry parameters well below regulatory limits. Management attention to the generation of radioactive liquid effluent waste contributed to low levels of radioactive material released to the environment. Quality of results and analytical capabilities were, in general, maintained at an excellent level. Maintenance of environmental monitoring equipment was an ongoing challenge during the assessment period.

Emergency preparedness staff were effective in following up to assure that problems were identified and corrected in a timely manner. Operators and other emergency response individuals showed good command and control during response to actual events and during exercises. Managers and staff continued to be proactive in modifying facilities to improve emergency response performance capability. This also resulted in well-maintained equipment and facilities. In general, emergency preparedness plan changes and their implementation were good with only minor errors and inconsistencies.

The security organization continued to be active in tracking and trending problems to effect correction of identified deficiencies. Although

certain problems continued from the last assessment period, the licensee identified them this period and took effective steps to preclude further recurrence. Routine day-to-day operations were conducted well throughout the assessment period.

Positive steps were taken to ensure control of maintenance activities that could affect fire protection at the site. Routine fire protection surveillances were effectively implemented. Fire brigade response was excellent during emergency preparedness exercises.

Housekeeping was good in the turbine building. Improvements were noted over the assessment period after the licensee implemented a program of accountability for areas in the plant and reclaiming areas in the auxiliary building. This remains a challenge in those areas not yet reclaimed.

Plant Support Area is rated Category 1.