

# SYSTEMATIC ASSESSMENT OF LICENSEE PERFORMANCE

## ST. LUCIE NUCLEAR PLANT

50-335/97-99 AND 50-389/97-99

### I. BACKGROUND

The SALP board convened on April 9, 1997, to assess the nuclear safety performance of the St. Lucie Nuclear Plant for the period January 7, 1996, through March 29, 1997. The board was conducted in accordance with Management Directive 8.6, "Systematic Assessment of Licensee Performance." Board Members were J. R. Johnson (Board Chairperson), Director, Division of Reactor Projects; D. M. Collins, Acting Deputy Director, Division of Reactor Safety; and F. J. Hebdon, Director, Project Directorate II-3, 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 operations area during the assessment period was considered good. Management oversight was evident in day-to-day plant operations as well as daily plant status and scheduling meetings. The plant was operated competently with few reactor trips, none of which were the result of operator errors. Control room conduct and professionalism were good. Control room communications were clear and well executed and comprehensive pre-activity briefings were conducted during this assessment period.

Operators' performance during plant shutdowns, startups, and transients continued to be a strength. Operators demonstrated conservative decision making and focused on safety. Plant startup and shutdown activities were well planned and properly executed, including activities associated with reduced inventory and fuel handling.

Operators were properly trained and qualified. The requalification program was adequate but some weaknesses existed. The use of Real Time Training Coaches indicated innovative and proactive Training Department involvement in plant activities.

Operators generally conducted routine plant activities in accordance with management expectations and procedural requirements. Operator attention to detail has shown some improvement during the assessment period. Plant operations continued to experience challenges in



procedural adequacy throughout the assessment period. Weaknesses were identified in control room command and control early in the assessment period.

Deficiencies were noted in the effectiveness of plant operators' identification of configuration errors. For examples, walkdowns of the units' instrument air systems, containment spray systems and post accident sampling systems resulted in the identification of a number of procedural inadequacies, design drawing inaccuracies, and hardware deficiencies.

Management was generally effective in controlling the use of licensed and non-licensed operator overtime. However, the routine heavy use of licensed operator overtime to support normal plant operations indicated that maintaining an adequate number of licensed reactor operators remains a challenge.

Company Nuclear Review Board activities to review proposed license amendments, due to higher than expected rates of Unit 1 steam generator tube plugging, were found to be probing and competent. Facility Review Group activities were thorough and appropriately focused on safety.

Quality assurance activities associated with operations were generally effective in identifying areas for improvements. A broad self-assessment of the overall site performance at the St. Lucie Nuclear Plant was comprehensive. Implementation of plant management initiatives to address each of the fundamental weaknesses identified in the assessment was considered necessary to sustain improvements.

The Plant Operations area is rated Category 2.

## II. 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, in-service inspection and tests and other tests associated with equipment and system operability.

Maintenance activities were generally conducted well with some improvement noted during this assessment period. The Maintenance Department was reorganized into functional units with rotating shift supervisors to improve performance. There was generally good planning and attention to detail in the performance of mechanical and electrical maintenance. Where used, predictive maintenance was effective in improving equipment performance. The in-service inspection activities were well planned, appropriately performed and well managed. In-service testing and surveillance activities were well coordinated and effectively implemented.

Management efforts toward upgrading procedures and training personnel to use them were not completely successful, particularly in Instrumentation

and Control (I&C) activities. Licensee efforts to correct instances of inadequate maintenance work instructions in use at work sites were more effective toward the end of the period.

Planning and management control were deficient when the responsibilities for calibration of the Unit 1 radiation monitoring systems were transferred from the Chemistry Department to the I&C Department before the I&C technicians were qualified to perform those calibration activities. Subsequent calibrations of plant radiation monitoring equipment were not adequate.

Reductions in operator work arounds, overdue preventive maintenances, and maintenance non-outage work orders demonstrated improved effectiveness in the overall maintenance program. Plant material condition was good and improved during the SALP period. Nevertheless, there continued to be challenges in equipment performance, for the most part in balance-of-plant equipment, that impacted plant reliability and challenged plant operation. Progress made during the last SALP period in operation of the Post Accident Sampling System (PASS) did not continue this period. The PASS system was not well maintained.

A self-assessment of the Maintenance Rule implementation conducted prior to rule implementation identified program areas needing additional attention. A followup audit found good corrective actions and identified specific areas needing further corrective action. Late in the period, the licensee established a program of quarterly self-assessments by each functional group in the Maintenance Department and an annual self-assessment as a whole.

The Maintenance area is rated Category 2.

### III. 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 declined from its previous superior level to an overall rating of good. Engineering provided good support for plant operations and continued superior performance in the area of licensing activities. However, weaknesses were noted in the preparation of modification packages, in the quality verification and validation of computer software, and in the identification and correction of long-standing design control deficiencies.

Reduction in the number of operator work-arounds was aggressively pursued and the backlog of plant changes and modifications decreased during the period. No plant transients attributable to engineering occurred during the assessment period. The In-service Inspection Program was well planned, well managed, and effective in identifying and correcting material problems prior to impacting plant operations.



Problems related to modification planning and design control persisted during this period. A number of problems related to the preparation of design changes, independent verification, and post-modification testing were identified associated with a modification to the nuclear instrumentation system. Failure to ensure that the computer software for the Digital Data Processing System was updated correctly resulted in operation in slightly excess of maximum rated thermal power for an extended period of time. Although improvements were noted toward the end of the assessment period, identification of problems in these areas indicated the need for continuing management attention.

Recent expansion of the System Engineer program was viewed as a significant potential improvement to the engineering program. However, many of the System Engineers were still new to their positions and required further training and development.

Licensing submittals were timely and well prepared. Most submittals were found acceptable by the staff with no need for additional information. Requests were submitted well in advance of when needed, allowing ample time for staff review. The licensee's responses to NRC requests have been timely and thorough. Of particular note, the NRC staff recently reviewed the licensee's actions related to Thermo-Lag modifications and concluded the plans were reasonable.

The Engineering area is rated Category 2.

#### 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.

Implementation of the radiation protection program was good. Strong upper management support for maintaining radiation worker doses As Low As Reasonably Achievable resulted in individual line management accountability and good control of individual and collective doses. Efforts to correct contamination control problems were not fully effective. Radiological worker practices were inconsistent.

Audits and corrective actions for radiological control programs were generally thorough with appropriate corrective actions, but the threshold for identifying findings was high in review of the Process Control Programs and Offsite Dose Computational Manual. The threshold was appropriately adjusted. Corrective actions to assure that sampling procedures were properly implemented were not fully effective; repeated procedural non-compliances resulted in inoperability of the Unit 1 containment radiation monitor on three occasions.

Training of Health Physics personnel was effective. The radiological effluent control and monitoring program implementation was good. Water chemistry was well controlled. Efforts to reduce the large inventory of

contaminated material and solid radioactive waste on site were very effective. The radioactive material shipment program was effective.

There was a significant decline in the Radiological Emergency Preparedness (REP) program early in the period. Indicators of the decline were identified to licensee management, but timely corrective actions were not taken. Corrective actions to audit findings were not timely. This indicated that management oversight of and priority to the emergency preparedness program were inadequate early in the period. The REP program implementation began to show improvement at the end of the assessment period.

The emergency plan was implemented effectively during several actual Unusual Events. An exercise early in the period also demonstrated that the onsite emergency plan could be effectively implemented. Two practice drills were required before this exercise for licensee management to be satisfied with performance. This was an indication of problems with the effectiveness of training. The program to assure that all individuals assigned emergency response functions were properly trained was not fully effective.

The primary and backup methods for augmentation of onsite staff for emergency response were not effective until corrective actions were taken late in the period.

The security program was generally effective, but there were problems with access control. Training and qualification continued to be a strength. Security equipment and facilities were well maintained and compensatory measures were generally good. Control of personnel access was weak. Badges of terminated employees were not promptly cancelled. The licensee's Access Authorization Program was satisfactory. The licensee identified errors in implementation of the Fitness-for-Duty Program and took appropriate corrective actions.

Overall, the licensee's response to potential and actual tampering events was satisfactory, but initially did not include evaluation of the full extent of condition. Appropriate preventive and corrective actions were taken.

Fire prevention/protection procedure quality was generally good and implementation was effective. Training of fire brigade personnel was good; however, personnel with expired medical certification were assigned to the brigade. Fire protection equipment maintenance and operability were overall effective; however, several fire protection features were modified without adequate evaluation. Plant housekeeping was very good, with significant improvement toward the end of the assessment period. Licensee management supported extensive efforts to reduce stored radwaste, reducing the volume substantially. Very few plant system leaks were observed and, when identified, were promptly repaired.

The Plant Support area is rated Category 2.