PERRY SALP 14

Report No. 50-440/96001

I. INTRODUCTION

The Systematic Assessment of Licensee Performance (SALP) process is used to develop the Nuclear Regulatory Commission's (NRC) conclusions regarding a licensee's safety performance. Four functional areas are assessed: Plant Operations, Maintenance, Engineering, and Plant Support. The SALP report documents the NRC's observations and insights on a licensee's performance and communicates the results to the licensee and the public. It provides a vehicle for clear communication with licensee management that focuses on plant performance relative to safety risk perspectives. The NRC utilizes SALP results when allocating NRC inspection resources at licensee facilities.

This report is the NRC's assessment of the safety performance at Perry Nuclear Power Plant for the period January 8, 1995, through September 14, 1996.

An NRC SALP Board, composed of the individuals listed below, met on September 25, 1996, to assess performance in accordance with the guidance in NRC Management Directive 8.6, "Systematic Assessment of Licensee Performance."

Board Chairperson

J. A. Grobe, Acting Deputy Director, Division of Reactor Projects, RIII

Board Members

H. B. Clayton, Acting Deputy Director, Division of Reactor Safety, RIII
G. H. Marcus, Director, Project Directorate III-3, NRR

II. PERFORMANCE ANALYSIS

Operations

Performance in operations improved during the assessment period and was good. Operations staff and management took greater leadership and ownership for plant performance, and continued to emphasize and implement a conservative, safety oriented operating philosophy. Stronger emphasis on effective communications and teamwork was evident and operator response to plant problems and transients was good. Management encouraged identification and resolution of problems and effective self-assessments. However, efforts to reduce personal errors, a concern in the previous assessment period, were not consistently effective and further improvement may be warranted in communications and interface with other departments to assure continued performance and materiel condition improvement.

Reductions in personnel errors occurred early in the assessment period, but occasional errors occurred representing a continuing challenge. Examples of personnel errors included a reactor scram caused by multiple operator errors in returning a feedwater pump turbine to service and a unit supervisor directing the line-up of a DC electrical system in violation of a procedural

requirement. Three operators questioned that DC power alignment while it was ongoing. On another occasion, an operator inadvertently started a motor driven feedwater pump lube oil pump when the control switch was placed in "on" instead of "standby." Further, due to communications problems, also a concern during the previous assessment period, during preparations for testing of one emergency diesel generator, a technical specification action statement was exceeded. These examples, and others occurring during the assessment period, indicated that continued focus on self-checking and communications may be warranted.

Operator response to several events and plant transients continued to be prompt and effective. Operators effectively responded to a reactor scram caused by a transformer failure and on a separate occasion handled a significant plant transient involving a feedwater pump trip while maintaining appropriate feedwater to the reactor. Shift supervisor oversight during events was good and control room communications and coordination was effective. Routine communications within the control room and between the control room and field operators improved with effective implementation of enhanced communication procedures. Expectations for control room and auxiliary operators were clarified and effectively communicated. Shift turnovers were good, control room panel attentiveness improved, and use of annunciator response procedures was effective. The initial license training program was effective, with good results on two initial exam sessions.

Stronger leadership and ownership for resolution of plant problems by operations contributed to effectiveness of problem identification and improvement in materiel condition. Coordination between operations, maintenance, and engineering improved. Examples of materiel condition deficiencies that have been resolved include the reactor core isolation cooling system turbine trip reset which had previously required local manual action, a significant reduction in the number of control room deficiencies and operator work-arounds, and prompt resolution of day-to-day issues.

Licensee management utilized a variety of self-assessment techniques to identify issues for correction. Many Potential Issue Forms were initiated by a broad spectrum of staff during routine activities. Licensee and contract personnel performed an effective, broad based, self-assessment of plant activities. Audits and surveillances by the quality assurance organization added insight into problem identification. The licensee completed the Perry Course of Action, which included several program and performance improvement activities and incorporated continuing initiatives into the Perry Plan for Excellence. While progress was made in identifying problems through these initiatives, corrective actions were not always effective as evidenced by the continuing challenges with human performance errors.

The performance rating is Category 2 in this area.

Maintenance

Overall, performance in the maintenance area was good, with improvement noted in work control. Personnel performance and plant materiel condition were good, although continued attention to these areas may be warranted. Perry

management aggressively utilized self-assessments in the maintenance area.

Improving the work control program was a major task underway in the maintenance area to address performance weaknesses identified during the last assessment period. More effective work control was demonstrated during a refueling outage, and through improved completion percentages for scheduled on-line activities. Significant material condition improvements were made during the outage in the feedwater system, the reactor recirculation pump seals, and the condensor. Online divisional maintenance outage management improved.

Routine surveillance and post maintenance test activities were conducted properly. A review of several complex surveillances that were done during the refueling outage showed that they were well controlled. Management oversight and briefings prior to surveillance performance were appropriate for the circumstances.

Personnel performance and the quality of work was good; however, opportunities for improvement continue in the areas of communication and foreign material exclusion. Failure to promptly communicate equipment configuration problems disclosed during a maintenance activity resulted in the subsequent unexpected loss of control room valve position indication. Further, communication weaknesses regarding damaged containment vacuum breaker position indication linkages contributed to untimely corrective actions. Foreign material exclusion problems included a piece of metal found in the reactor core isolation cooling water leg pump coupling, several items dropped into the reactor pressure vessel during refueling activities, and a piece of tape that partially obstructed a recirculation pump seal water injection line, apparently left there from the previous refueling outage.

The materiel condition of safety-related equipment remained excellent throughout the assessment period and continuing improvement was noted in balance of plant equipment condition. Examples of improved plant materiel condition included a reduction in the number of temporary modifications during the refueling outage, as well as reduced control room deficiencies and operator work arounds. However, there have been failures of components, including transformers and inverters, that challenged plant operations.

The licensee has been proactive in taking action to improve maintenance during this period. This included regular in-field assessments of work activities, in addition to normal supervisory oversight. Further, special actions were taken associated with implementation of the maintenance rule, including pre-implementation evaluation of readiness and post-implementation evaluation.

The performance rating is Category 2 in this area.

Engineering

Performance in engineering was good and improved from the previous assessment period. Better support to operations resulted in equipment performance enhancements as evidenced by fewer transients and few complications following scrams. Design change process effectiveness improved; however, some

implementation problems occurred. Likewise, the corrective action program improved but was not consistently effective in resolving identified problems.

Day-to-day support to operations contributed to improved performance of plant equipment, particularly balance-of-plant systems, but the quality of engineering work was inconsistent. Examples of good performance included good support for a drywell shield door issue, drywell cooler fan replacement activities, and oversight of scram solenoid pilot valve testing. Engineering's support of license amendments was excellent with minimal NRC followup required. Examples of poor engineering support included failure to identify compensatory actions for emergency diesel generator room low temperature, slow response to operations regarding use of a newly installed emergency service water (ESW) pressure gauge, and an inadequate evaluation of degrading ESW pump performance.

The design change process was generally effective and recent process changes resulted in improved quality of design change packages and safety evaluations. However, there were occasional problems which indicated that additional improvement is warranted. Examples include engineering not recognizing until after installation that a leakage control system modification would affect the isolation function of the reactor core isolation cooling system, an emergency closed cooling temperature control valve modification which did not provide adequate instructions for electrical work, and a service water modification which failed to provide clear instructions regarding soil fill compaction requirements.

Self assessments of the design change program, instrumentation and controls area, and motor-operated valve program were thorough and identified a number of good issues. Although these aspects of the self assessments were encouraging, the licensee's corrective action process failed to consistently correct identified problems. This remains a concern from the previous assessment period. For example, the failure to take appropriate corrective actions to address a known design vulnerability of an inverter failure resulted in two reactor scrams. In addition, replacement dates for Agastat relays were inappropriately extended, and actions were untimely for correcting problems with testing the plant underdrain system. In addition, the NRC recently identified that corrective actions were not comprehensive for a significant 1993 event regarding a leaking emergency closed cooling system valve, and corrective actions to address the inability to operate the control room complex chillers under certain environmental conditions were not timely or effective.

The performance rating is Category 2 in this area.

Plant Support

Plant support performance was good and improved from the previous period. The most notable improvement was in the area of radiation protection, including greatly reduced dose during the 1996 refueling outage. Performance in chemistry, radiological effluent monitoring, security and emergency preparedness programs remained strong. Fire protection performance remained good.

Performance in the radiation protection program improved during this assessment period and was good. Performance during the refueling outage was markedly improved due to increased management attention, better planning and scheduling, and better radiation worker performance. Source term reduction efforts, including chemical decontamination of systems and hot spot removal, also contributed to dose savings during and following the outage. The containment and the emergency core cooling system rooms were maintained uncontaminated during power operations allowing easy operator access to essential equipment. However, there were occasional lapses in radiation worker performance, a concern during the previous assessment period, and coordination of activities, the most significant being the inadvertent creation of a high radiation area in the upper drywell when a highly radioactive reactor internals component was placed in the refueling cavity near the drywell. Other performance issues identified during the period included contaminated tool control problems, the unintentional transfer of exempt quantity sources, and the transfer of slightly radioactive waste to a public landfill.

Chemistry controls were excellent and resulted in water chemistry remaining within industry guidelines and feedwater iron levels being reduced. Laboratory quality programs were well implemented. Radioactive effluents were well below Technical Specification limits. Waste processing, the radiological environmental monitoring program, and the radioactive shipping programs were also effectively implemented.

Security program performance was excellent. Security staff experience professionalism, and teamwork, coupled with excellent maintenance of security hardware resulted in an effective program. Security staff identified and effectively addressed issues including an apparent generic vulnerability of a specific type of metal detector, and the failure of a self-screening contractor to adjudicate some derogatory information during the background investigation of an applicant for temporary unescorted access. Maintenance and engineering support was effective in installing a land vehicle barrier system, and in maintaining security system hardware at a high level of performance. One identified concern was the slow notification of the security department by a plant supervisor of an incident involving aberrant behavior of a plant employee.

Emergency preparedness program implementation continued to be excellent. Response facilities and equipment were maintained in a high state of readiness, and the licensee responded appropriately to an unusual event. Although a weakness concerning one offsite notification was identified during an exercise conducted just after this assessment period ended, overall performance during the drill was excellent.

Implementation of the fire protection program was good with improved identification and resolution of issues. Transient combustible material control improved. However, concerns were identified in this area including the storage of scaffold material near fire mains, combustible material storage problems, and a few emergency lights which were not directed at the correct locations, a concern during the previous assessment period. The plant fire brigade responded well to two small fires and one other occasion when smoke

was detected.

The performance rating is Category 2 in this area.