

ENCLOSURE

SALP REPORT - SHEARON HARRIS UNIT 1
50-400/94-01
SEPTEMBER 27, 1992 - APRIL 2, 1994

I. BACKGROUND

The SALP Board convened on April 19, 1994, to assess the nuclear safety performance of Harris Unit 1 for the period of September 27, 1992, through April 2, 1994. The Board was conducted pursuant to NRC Management Directive 8.6, "Systematic Assessment of Licensee Performance." Board members were J. Philip Stohr (Chairperson), Director, Division of Radiation Safety and Safeguards, Region II (RII); Johns P. Jaudon, Acting Deputy Director, Division of Reactor Projects, RII; Albert F. Gibson, Director, Division of Reactor Safety, RII; and S. Singh Bajwa, Acting Director, Project Directorate II-1, Office of Nuclear Reactor Regulation.

The performance category ratings and the assessment functional areas used below are defined and described in NRC Management Directive 8.6, "Systematic Assessment of Licensee Performance (SALP)."

II. PERFORMANCE ANALYSIS - PLANT OPERATIONS

This functional area consists of 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.

During this assessment period, which encompassed an entire operating cycle, the operators controlled the plant in an effective manner, anticipating problems. There were no unplanned reactor trips and only one brief but planned shutdown to make a repair. There were five instances in which power was reduced briefly to perform maintenance.

The instances of power reduction were indicative of the conservative approach to plant operations taken by management, demonstrating a philosophy of addressing problems well before the problems reached a limiting condition. The licensee also used the simulator effectively to allow the operators to practice in preparation for power reductions. This was supported by thorough briefings before the power changes were made. Although a power reduction is an event for which the operators are trained, it was a relatively unusual evolution at Harris because the plant had been at power for long periods. In this, the licensee demonstrated a conservative approach to operations and the ability to control events instead of being controlled by them.

Although there were no significant operational events, licensee management was proactive in establishing event review teams in order to examine those relatively minor occurrences which did happen. These event review teams were used in order to identify precursors and to preclude repetition of them. As a result, corrective actions were effective.

The previous SALP had identified operator performance and attention to detail as challenges. Operator performance in the plant, as discussed above,

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demonstrated a superior level of achievement. While there were a few instances which could be characterized as representing inattention to detail, there were other instances in which operator attention to detail prevented potential transients. Control room demeanor and professionalism were excellent.

Operations management was involved in training, and the performance standards taught in the simulator matched those expected in the plant. There was a perfect pass rate for all NRC administered examinations. While some minor problems were identified in written examinations, such as a common area of weakness in radiation monitor operation, the overall assessment of operator training and performance was excellent. As discussed above, specific training was successfully conducted for unusual evolutions.

The Plant Operations area is rated Category 1.

III. PERFORMANCE ANALYSIS - MAINTENANCE

This functional area addresses activities associated with diagnostic, predictive, preventive, and corrective maintenance of plant structures, systems, and components and with the overall physical condition of the plant. It also encompasses all surveillance testing and other tests associated with equipment and system operability.

The programs and procedures for the performance of maintenance activities were noted to be excellent and in nearly all cases gave the proper level of guidance and direction. This supported the overall improvement in maintenance during the assessment period. Routine maintenance and surveillance activities were consistently conducted in a timely manner because of the improved quality of the procedures and the effectiveness of the scheduling program. The reliability-centered maintenance program, the system of alternating periods for train-related maintenance, the motor-operated valve maintenance program, and the erosion/corrosion control program were all strengths. Some minor procedural weaknesses and personnel errors were noted in the early part of the assessment period, such as the changing of the motor leads without properly following tagging out procedures and the spilling of contaminated water in the reactor auxiliary building caused by an inadvertently open drain valve. The licensee's corrective actions avoided similar problems from recurring for the remaining part of the assessment period.

Management involvement in and support for the maintenance area were excellent. Improvements made during the assessment period were noted in the following areas: work-planning process; integrated work control center; implementation of the stop, think, act, review (STAR) program; training program for the maintenance support staff; and a policy of fixing equipment before it breaks. For example, even though an erosion predictive computer calculation indicated that no problem should exist, the licensee inspected six-inch diameter pre-heater bypass piping and associated auxiliary feedwater piping in the steam tunnel and containment building. As a result, 30 feet of piping were found in need of replacement. The implementation of these improvements demonstrated effective management of planning and control. Outage planning was excellent. Management control was enhanced by effective daily meetings to ensure

coordination between plant organizations. These efforts resulted in reducing the volume and the average age of the plant work backlog. Excellent plant material condition and overall equipment performance contributed to operating without a reactor trip or a plant transient during the assessment period.

Several innovative maintenance practices were continued this period; for example, a full-time dedicated crew of instrumentation and control technicians was maintained to perform testing and troubleshooting of the reactor protection system and engineered safety feature instrumentation. Work during outages was often staged with mocked-up hardware for craft training, thus, effectively reducing personnel exposure. This demonstrates that the licensee has a firm commitment to the implementation of a proactive and preventive maintenance program. In general, the maintenance staff was stable, experienced and well trained to perform the assigned tasks.

Self-assessments performed by the Nuclear Assessment Department, in the maintenance area, were effective. By observing field activities, quality control personnel continued to effectively identify and resolve isolated performance deficiencies. Root cause evaluations were generally adequate. Corrective actions were effective most of the time, and issues were typically resolved without a significant safety impact. Plant management recognized the need to improve the effectiveness of the newly implemented work control center and is taking action to address this area. In some instances, implementation of corrective actions was not timely, and a few minor repetitive failures occurred.

The Maintenance area is rated as Category 1.

IV. PERFORMANCE ANALYSIS - ENGINEERING

The functional area of engineering addresses the adequacy of technical and engineering support for all regulated plant activities and interfaces. Design control and modifications are encompassed as is the engineering support for operations, maintenance, outages, testing, and licensing related activities.

Effective design controls assured that changes in plant design were consistent with a well documented design basis. Drawings were legible and up-to-date, safety evaluations performed pursuant to 10 CFR 50.59 were technically sound, plant modifications were properly designed, and licensing submittals were adequate and timely. The backlog of planned design changes was appropriately prioritized for implementation.

Strong management involvement was evident in the site and corporate engineering programs. In general, the engineering staff were knowledgeable and well qualified which was reflected in the quality of their efforts. Lessons learned at other sites were applied at Harris. Aggressive performance goals were set and appropriate resources were provided for implementation. Backlogs of engineering work were monitored by management and were steadily reduced throughout the period. Significant reductions occurred in the backlogs of engineering calculations, drawings and plant change requests. The backlog of planned modifications was reduced, in part, by cancellation of

modifications that were no longer justified. These cancelled modifications received appropriate safety review prior to cancellation.

Strong engineering support was provided to plant operations. Engineering support was effective in reducing design and maintenance conditions that adversely impacted operator activities. An improving trend in such conditions continued throughout the period. The backlog of plant temporary modifications was reduced. Effective engineering support was provided in response to operational events. For example, engineers provided effective assistance in troubleshooting a turbine runback in February 1993. Their independent calculations of heater drain pump net positive suction heads revealed instrumentation scaling errors that had resulted in false indications.

Strong engineering support was also provided for plant maintenance activities. Several plant modifications were successfully implemented to increase the reliability of safety-related equipment. Examples included replacement of Train A, 480 volt circuit breakers with breakers of a more reliable design, and installation of a spare battery cell and charger in each battery room. Thermography, vibration analysis and oil analysis were used effectively for predictive maintenance. Good engineering support was also provided for the development and implementation of testing programs. Examples included programs for diagnostically testing motor operated valves, non-destructive examination, and the program for predicting degradation of piping due to erosion and corrosion. An exception to this good test support was the failure to specify adequate post maintenance testing for a charging/safety injection pump.

Evaluations of engineering performance by the Nuclear Assessment Department were effective. The licensee identified the need to strengthen self-assessments performed by the Nuclear Engineering Department and site engineering organizations and took steps to improve this performance.

The engineering area is rated Category 1.

V. PERFORMANCE ANALYSIS - PLANT SUPPORT

The plant support functional area addresses all activities related to radiological controls, plant chemistry, emergency preparedness, security, fire protection, and housekeeping.

In the radiological control area, a well managed ALARA program has been effective in reducing the collective dose. Dose reduction initiatives implemented during the period included early boration, teledosimetry, and increased remote camera usage. During 1992, the collective dose was limited to 213 person-rem with a refueling outage contributing 173 person-rem to this total. Doses received during the outage were commensurate with the work involved. In 1993, the collective dose was limited to 31 person-rem which was considered excellent for the non-outage work performed. Strong management support to the radiation protection program was evidenced by equipment upgrades, personnel resources, and ALARA performance initiatives. Contamination control practices were considered a strength during this period. Contaminated area continued to be maintained low, and for 1992 and 1993, was

maintained at about 0.4 percent of the Radiation Controlled Area. The number of personnel contamination events were reduced from 134 in 1992, to 45 in 1993. Improvements were also noted in the NAD assessment function in this area. Increased management attention to identified issues resulted in improving the overall effectiveness of the self-assessment function. Adherence to radiological control procedures was generally good.

The program for control of radiological effluents was effectively conducted this period. Radiation detection equipment and monitors were well maintained. Comparison of results for radionuclides showed good agreement when compared with known values. Primary and secondary chemistry program parameters were well within Technical Specification requirements. An improved secondary chemistry sampling system was installed during this period. The radioactive waste management program achieved annual decreases in the volume of waste over the past two years, and the shipping program was well executed by dedicated, competent personnel. Progress was noted in efforts to upgrade the Post Accident Sampling System.

Performance in the area of emergency preparedness showed improvement, particularly in the latter part of the period. Increased management support was noted by OSC upgrades, staffing increases, and the establishment of an Emergency Preparedness Advisory Board. An excellent working relationship has been maintained with the offsite support agencies. The declaration and response was appropriate for two actual events classified as Notification of Unusual Events during the period. The audit program and exercise/drill critique process was noted to be both detailed and comprehensive. During the 1993 annual exercise, two exercise weaknesses were identified related to damage control team response and EOF dose assessment activities. Both of these have been appropriately addressed by CP&L. Additionally, weaknesses associated with ERFIS reliability were satisfactorily addressed toward the end of the period.

The physical security program continued to be very well implemented during this period. Security personnel were well trained and exhibited professionalism in the performance of their duties. Significant improvements were made in the area of equipment maintenance and repair which resulted in a reduction of required compensatory measures. Audits of the security program were thorough, complete, and in-depth and were considered a strength. Resulting corrective actions were thorough and timely. Noteworthy during this period was the contingency planning for a land vehicle bomb threat scenario. During the period, there were some relatively infrequent examples of lack of attention to detail, e.g., misissuance of security badges.

The fire protection program continued to be effectively implemented during this period. Control of fire fighting equipment was good. Relocation of the turnout gear/dressout area resulted in improved access. Performance during the frequent fire fighting drills was generally good. During the period, there were some instances of lack of attention to detail in the areas of maintenance of pre-fire plans and performance of fire watches.

While overall housekeeping was generally good, some decline in housekeeping conditions was noted during the latter portion of the SALP period.

The Plant Support area is rated Category 1.