

SYSTEMATIC ASSESSMENT OF LICENSEE PERFORMANCE REPORT
CALLAWAY PLANT
50-483/97-99

I. BACKGROUND

The SALP Board convened on May 14, 1997, to assess the nuclear safety performance of the Callaway Plant for the period April 30, 1995, through May 10, 1997. The Board was conducted in accordance with Management Directive 8.6, "Systematic Assessment of Licensee Performance." The Board members included: K. E. Brockman, Deputy Director, Division of Reactor Projects (Chairperson); A. T. Howell, Director, Division of Reactor Safety; and W. H. Bateman, Director, Project Directorate IV-2, Office of Nuclear Reactor Regulation. This assessment was reviewed and approved by the Regional Administrator.

Functional Areas and Ratings

	<u>Current</u>	<u>Previous</u>
Operations	2	1
Maintenance	1	1
Engineering	1	1
Plant Support	1	1

II. OPERATIONS

Overall safety performance in the Operations functional area during this assessment period was good. Plant operations during transient and nonroutine events continued to be superior; however, performance during normal, routine operations did not display the same degree of rigor and consistency. This was demonstrated by the numerous instances of procedural violations and inattention to detail and continuing problems with protective tagging and valve misalignments. Management was involved in day-to-day operation of the plant and had an appropriate safety focus; however, there were instances in which inappropriate Technical Specification Interpretations were identified. Early in the period, problems with shift turnovers and communications were noted. Overall, operator training performance remained effective. Quality assurance audits were effective and thorough.

Management support of and involvement with the daily operation of the plant continued to exhibit a strong safety focus. During preventive maintenance activities, the plant was consistently placed in the operational condition which minimized risk. During major plant evolutions, management provided coverage of control room activities. Operators demonstrated ownership of control room material condition deficiencies. The number of inoperable main control board annunciators was maintained at a low level throughout the assessment period.

Operator professionalism and performance during transient and nonroutine operations was strong. As an example, the responses to the unexpected loss of a main circulating water pump and the inadvertent closure of a main feedwater isolation valve were timely and effective. However, operators committed a number of errors involving procedure implementation, protective tagging, and valve configuration control. This resulted in

implementation, protective tagging, and valve configuration control. This resulted in several instances in which the control of steam generator level during low power operations was challenged, borated water was inadvertently routed to the reactor coolant system as opposed to the spent fuel pool, and a safety injection pump was operated without component cooling water. Altogether, these problems indicated lapses in operator attentiveness and a lack of rigor during normal operations.

Training of plant operators was good. The licensee's operator requalification program was effectively implemented. Simulator scenarios were challenging and provided an effective evaluation tool. Operations management actively participated in both the development of training curricula and the evaluation of crew performance. Reactor operator performance on the written portion of the most recent initial licensing examination, however, only demonstrated marginal knowledge levels.

The licensee typically demonstrated an appropriate level of management oversight and a good safety focus. Shift supervisors exhibited a questioning attitude and conservative decision making. The Onsite Review Committee, however, failed to identify that two Technical Specification Interpretations conflicted with the Technical Specifications. The deficiency in this review, which was conducted after similar problems were identified at another nuclear facility, failed to prevent the Technical Specifications from being violated.

The licensee's quality assurance audits of operations activities were generally comprehensive and insightful. Recently, the licensee chartered a special initiative under the leadership of the shift supervisors to address the numerous human performance problems identified throughout the assessment period. The effects of this initiative and the scope of improvement has yet to be determined.

Overall, the performance rating in the Operations functional area was Category 2.

III. MAINTENANCE

Overall safety performance in the Maintenance functional area was maintained at a superior level. Management continued to be effectively involved in maintenance and testing activities. Material condition was good overall; however, there were several hardware problems that challenged the availability and reliability of a number of plant systems. The quality of maintenance programs and procedures was very good. The conduct of maintenance and testing activities remained excellent overall, but there were personnel errors noted throughout the assessment period. Work planning, scheduling, and coordination improved throughout the assessment period. There was a consistently superior level of performance in the area of self-critical reviews and assessments.

Management continued to demonstrate conservative decision making throughout the assessment period. On several occasions, plant power was reduced or the unit was taken off-line in order to assure that proper safe conditions were maintained while the equipment was being repaired.

The overall material condition of the plant was determined to be good. The corrective maintenance backlog was significantly reduced and maintained at a low level. Problems affecting the turbine-driven auxiliary feedwater pump were effectively resolved. Minor steam, water, and oil leaks were thoroughly assessed for plant impact and properly tracked and trended. However, there were a number of trips and power excursions stemming from balance-of-plant equipment problems, primarily related to the main feedwater and circulating water systems. There were also problems that affected the availability of systems important to safety, such as the reactor vessel level instrumentation system and the postaccident sampling system. While foreign material exclusion control effectiveness, an issue in the previous SALP, improved during this assessment period some continuing problems were noted.

Maintenance programs and procedures were of excellent quality and effectively implemented. Procedure adequacy concerns, identified early in the assessment period, were effectively addressed by the implementation of a maintenance procedure upgrade program. The development of the "Equipment Train Out of Service Probabilistic Risk Assessment Matrix" allowed operators and work planners to quickly and easily recognize undesirable and unacceptable plant equipment configurations on the basis of relative risk.

The overall conduct of maintenance and surveillance activities was also excellent. Safety-related equipment outages were well planned and executed, and outage time was minimized. The licensee routinely developed comprehensive work packages, with identified contingency plans. Work planning, scheduling, and coordination improved throughout the assessment period.

A number of personnel errors were identified throughout the assessment period. In particular, problems were noted with technicians working beyond the authorized work scope and failing to adhere to procedures. On the whole, these errors were isolated and relatively minor in nature.

The licensee continued to perform thorough, self-critical audits and reviews. For example, the quality assurance organization identified a missed opportunity to resolve a long-standing problem affecting a residual heat removal injection valve.

Overall, the performance rating in the Maintenance functional area was Category 1.

IV. ENGINEERING

Overall performance in engineering was superior. Engineering management was effective and exhibited a strong safety focus. Excellent engineering practices were demonstrated by a strong system engineer program, a minimum engineering backlog, the effective control of plant modifications, a good design basis information process, and a very effective independent safety engineering group. The interfaces between engineering and the other plant disciplines and the support provided to operations and maintenance were excellent. The quality of work performed by the engineering staff on routine engineering functions

was very good, as were the engineering programs and procedures. In addition, quality assurance audits of engineering were effective in identifying problems.

A strength of Callaway engineering was its ability to effectively support the operations and maintenance departments during emergent and time-critical situations. Engineering consistently resolved issues, such as the excess letdown line leak, in an effective manner. Implementation of the engineering duty supervisor and backshift engineer programs provided key support to the operations and maintenance functions. As a result, the engineering department was an effective member of the plant operational support team.

The training and qualifications of the individual engineers were excellent. The system engineering function was especially strong and reflected the individual skills and experience of the staff. This resulted in the quality of plant support engineering activities, such as evaluations in support of requests for resolution, suggestion-occurrence-solution reports, and plant modifications being very good. In contrast, the quality of licensing action requests and responses to generic communications, as was evidenced by the licensee's response to control rod insertion problems (NRC Bulletin 96-01), was not as good.

Engineering programs and procedures were also very good; however, there were isolated implementation problems. For example, effective controls were implemented to ensure that design basis documents were available and were easily retrievable. However, the implementation of the 10 CFR 50.59 and plant modification programs lacked consistency, as was shown by the instances in which drawings and procedures did not reflect the plant's licensing and design basis.

Quality assurance audits of engineering were effective in identifying problems. The root cause analysis program, however, had some implementation problems, as was demonstrated by the fact that root causes were not always documented for suggestion-occurrence-solution reports, as required.

Overall, the performance rating in the Engineering functional area was Category 1.

V. PLANT SUPPORT

Overall performance in the Plant Support area continued at a superior level. Performance in the radiation protection function was good, but some implementation problems were noted throughout the assessment period. The emergency preparedness and security functions continued to be implemented at a superior level. Housekeeping was good overall. Self-assessment and corrective action effectiveness were again noteworthy strengths.

Radiation protection performance was generally good. Training provided to individuals in this area was excellent. Effective radiation work scheduling techniques were used in preparation for the 1996 refueling outage; however, unexpectedly high dose rates were experienced during the refueling outage. In addition, some aspects of the ALARA program

were conducted informally and, in some cases, ineffectively. A good respiratory protection evaluation process was implemented. Radiation work permits and prejob briefings generally provided proper guidance to radiation workers.

The liquid and gaseous waste effluent management programs were properly implemented. The programs for the management of solid radioactive waste and the transportation of radioactive materials and radioactive waste were properly maintained. An excellent meteorological monitoring program was implemented. Some problems were identified in the radiological environmental monitoring program involving the location of the air sampling control station and the condition and operability of sampling equipment.

Performance in the emergency preparedness area continued to be excellent. Emergency response facilities were well maintained and operational. Performance during the biennial exercise was strong, although the exercise scenario was minimally challenging. Exercise performance was characterized by effective communications, command, and control in all emergency response facilities.

Performance in the security area continued at a superior level. Management oversight and support for the security, access authorization, and fitness-for-duty programs remained strong. The interface between the operations and security departments was very effective. Changes to security programs and plans were reported and implemented, as required, with no decreases in program effectiveness. Compensatory postings for identified problems were minimized because of excellent maintenance support. An effective program for searching personnel, packages, and vehicles was maintained. The access authorization program and the land vehicle barrier system were effectively implemented.

Overall, housekeeping was well maintained. However, management expectations were not always met and, therefore, housekeeping standards were inconsistent throughout the various areas of the plant.

Self-assessment and corrective action effectiveness continued at a high performance level. In-depth audits and surveillances were conducted by the quality assurance organization. Radiation protection personnel responded well to situations such as unexpected, rising dose rates, and their actions in correcting identified deficiencies were timely and effective. The critique of the biennial emergency exercise was thorough and self-critical. The in-depth audit of the security program was considered to be particularly strong.

The performance rating in the Plant Support functional area was Category 1.