feedback on both the physical condition of the facility and maintenance performance. A comprehensive outage risk management process was safely and effectively implemented during the 15R outage. The outage risk assessment clearly defined and critically assessed system and overall plant configurations. Outage activities were conservatively planned and online maintenance activities were effectively implemented. The repair of the core shroud became a major activity that was well integrated into the outage work and performed in a systematic and safe manner.

Maintenance personnel expertise and plant knowledge were strengths. Personnel training often included the effective use of equipment mockups. Trouble-shooting activities were very well controlled and systematically investigated plant problems. Particularly noteworthy were the identification and correction of a slight misalignment of the reactor feedwater pump shaft and the identification of the cause for multiple failed components in the emergency diesel generator.

Overall, the material condition of the plant was very good. The maintenance backlog has been effectively managed and prioritized for safety significance. The maintenance rework rate was extremely low. The decreasing number of equipment failures shows that equipment reliability has improved. The preventive maintenance program was implemented effectively and contributed to the improved equipment reliability.

Despite the generally strong performance of maintenance, instances of ineffective communications, breakdowns in the control of maintenance, or weak supervisory oversight and technical support contributed to some plant challenges that detracted from overall performance. For example, ineffective communications resulted in secondary containment being inadvertently compromised when a recently completed modification was inappropriately used during maintenance. A second challenge was the initiation of a plant shutdown and declaration of an Unusual Event that resulted from work performed outside the scope of the controlling job order. A third challenge was a reactor trip signal while shut down during post-maintenance testing of the newly installed digital reactor recirculation flow control system, which was the result of weak supervisory oversight and technical support of the testing. Early in the period, there were several examples of inadequately reviewed and incomplete work packages that resulted in plant challenges. In addition, early in the period, the control over transient and stored loose maintenance equipment located near safety-related components was weak.

The surveillance program improved this period as a result of station management's efforts to address weaknesses identified in the last period. Increased personnel sensitivity to identifying weak procedures has resulted in improved procedures. In addition, operability determinations for equipment during surveillance testing have now been integrated into the procedures. The inservice inspection program was effectively implemented. Particularly noteworthy was the ultrasonic examination technique, developed for an emergency condenser valve stem cracking problem, that was capable of detecting a flaw before it would reach the critical flaw size. The quality of the visual inspection of the core shroud was very good. Notwithstanding the good performance by contractors associated with the core shroud inspections, the

licensee provided only limited oversight of those contractors' activities. They relied mainly on the reputation and the previous good performance of the contractors.

In summary, maintenance management continued to demonstrate a strong safety perspective and generally effective oversight of maintenance activities. Outage risk management was excellent. Significant improvements were observed in the surveillance program. However, some plant challenges resulted during maintenance for a variety of reasons, including ineffective communications, breakdowns in the control of maintenance, and weak supervisory oversight of contractors' activities

The maintenance area is rated **Category 2.**

IV. PERFORMANCE ANALYSIS -- ENGINEERING

Engineering was rated Category 1 last period, with a strong safety perspective and excellent engineering analyses noted. Design modifications were well planned and executed and there was strong engineering management oversight. Communications between the engineering organizations and with the plant operating organization were good. However, weaknesses were noted in some safety evaluations, in responses to industry information, and in the timeliness of corporate engineering input to operability issues.

During this period, strong management involvement in engineering activities continued. Site and corporate engineering organizations performed effectively in support of the resolution of plant problems. Communications between the engineering organizations and the plant continued to be very good. Engineering work backlogs were effectively controlled. Site and corporate engineering provided quality support for plant modifications and safety evaluations such as those for the core spray system recirculation function, the drywell cooling fan upgrade and the addition of expansion joints in the condensate transfer system. Engineering management effectively used lessons learned from the digital feedwater system modification to make the staff more aware of issues germane to digitally-based modifications, although the procedures, guidance, and training plans to address the digital upgrade process were not yet in place.

The technical quality of engineering work continued to be excellent. The calculations and analyses that supported modifications, such as those associated with the station blackout rule, were typically thorough. Operability analyses performed for identified deficient equipment conditions were timely and of high quality; for example, the engineering evaluation of service water piping leaks resulted in a broad action plan applicable to other susceptible piping systems. Further, testing conducted with system engineering oversight was effective in identifying and determining the cause of slow alternate control rod insertion response times and in identifying a longstanding reactor water cleanup pump motor wiring problem. Also, thorough troubleshooting analyses identified the root cause of a recirculation pump motor trip, and corporate engineering effectively and quickly responded to a concern associated with the stresses on the primary containment due to