

DIABLO CANYON NUCLEAR POWER PLANT
SYSTEMATIC ASSESSMENT OF LICENSEE PERFORMANCE
REPORT 50-275/96-99; 50-323/96-99

1. BACKGROUND

The SALP Board convened on August 21, 1996, to assess the nuclear safety performance of the Diablo Canyon Nuclear Power Plant for the period September 1, 1994, through August 17, 1996. The Board was conducted in accordance with NRC Management Directive 8.6, "Systematic Assessment of Licensee Performance." The SALP Board members were:

K. E. Perkins	Board Chairman Director, Walnut Creek Field Office
K. E. Brockman	Board Member Acting Director, Division of Reactor Safety
W. H. Bateman	Board Member Director, Project Directorate IV-2 Office of Nuclear Reactor Regulation

This assessment was reviewed and approved by the Regional Administrator.

Functional Areas and Rating:

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

II. OPERATIONS

Overall safety performance in the operations area has been good. This represents a decline from the previous SALP period. Operators have continued to demonstrate a strength in their ability to respond well to significant operating challenges and to exercise conservative control over critical plant operations. However, the instances of lax procedure adherence observed towards the end of the previous SALP period increased over the course of the current period. Licensee management appears to have lost focus on initiatives for sustaining superior performance and to have caused some staff concerns and performance problems. Licensee management has recognized the situation through a self assessment but has not yet been effective in reversing this declining trend.

The licensee continued to demonstrate a generally conservative operating philosophy with an appropriate safety awareness. This was evident during the Unit 1 startup in June 1996, when minor delays in the startup impacted the estimated critical xenon concentration. Even though the estimated critical position (ECP) of the control rods was expected to meet procedural requirements, the operators elected to further delay restart while the ECP was recalculated.

Towards the end of the previous SALP period, management initiated actions to correct an increase in the incidence of procedure noncompliance caused by operator's inattention to detail and lack of a questioning attitude. Management's expectations for these initiatives have not been met, as procedure noncompliances and configuration control problems have increased. An example of inconsistent emphasis on meeting management expectations and ensuring their clarity was evidenced by some operators who were not clear as to management's expectations for authorizing deviations from procedural steps that do not clearly describe the appropriate course of action.

Operations continued to perform well when challenged by plant events and during critical plant operations. A special inspection to investigate the events leading up to and following the explosion of Auxiliary Transformer 1-1 found that operators responded well to the loss of offsite power resulting from the event. However, during routine activities, problems with conduct of operations which included inattention to detail, failure to follow procedures, some instances of poor procedure quality, and a lack of focus during the performance of routine activities, continued to result in Technical Specification violations, procedural violations, and configuration control problems. Management's unclear expectations with respect to operations having responsibility for configuration control in the clearance order process, as well as ineffective corrective actions to an earlier problem involving lack of control of grounding devices contributed to the explosion of Auxiliary Transformer 1-1 in October 1995. Inattention to detail in following procedures caused two Unit 1 residual heat removal pumps to be technically inoperable for about one hour in June 1996. An operations self-assessment identified conduct of operations as an area for improvement, and management is clarifying and emphasizing their expectations in this area.

Performance in the operator training program was mixed. The licensed operator programs provided good feedback to the trainees, and self-critiques of the crews paralleled the evaluators' findings. Communication practices, however, did not meet management expectations and were a generic weakness among the three crews observed during inspection of the operator requalification program. Operations management has targeted communication practices for improvement.

Operations department self-assessments were effective in identifying problems, but root cause determinations were not always performed in the thorough, comprehensive manner characteristic of the previous evaluation period. In addition, corrective actions were not always timely or effective in resolving identified problems. Although a number of successes were noted, performance in this area was inconsistent.

The performance rating in this functional area is Category 2.

III. MAINTENANCE

Performance in the maintenance functional area has been good. This represents a decline from the superior performance noted in the previous SALP period. Effective maintenance programs continued to provide appropriate guidance. The technical capability of the craft personnel remained very high. However, performance weaknesses, which contributed to operational events and unplanned power reductions, were noted throughout the

assessment period. These performance shortcomings manifested themselves in the areas of communications, configuration control, planning, procedural compliance and troubleshooting. Additionally, while the overall material condition of plant safety systems was excellent, problems with balance-of-plant equipment contributed to plant operational challenges.

Management support, while considered good, was not as effective as during the previous assessment period. Weaknesses in the training program were dominated by a lack of management attention and participation; the communication of lessons learned from operational experience was not consistently effective; and adherence to procedures was not consistently reinforced by management. Maintenance management also was challenged with reorganization activities, which included the combining of the I&C and electrical departments. This resulted in problems in the assignment of work to qualified personnel. By the end of this assessment period, performance initiatives instituted by a new management team indicated a general recognition and understanding of the problems facing the maintenance organization.

The overall material condition of the plants was excellent, especially safety systems and components. But the material condition of balance-of-plant systems, such as the main feedwater control system, negatively impacted plant operations and resulted in several unplanned plant evolutions.

Maintenance programs and procedures continued to provide effective guidance. Risk considerations were routinely factored into the planning process, in particular with the licensee's establishment of a 12 week planning matrix for maintenance activities. However, there were instances where planning deficiencies, in spite of the barriers inherent to the 12 week planning matrix, resulted in incomplete and improperly performed work activities. The licensee recognizes the need for continued effort to improve the control and implementation of maintenance.

The most apparent contributors to the decrease in performance were the lack of supervisory oversight and the inattention to detail on the part of the individual craft workers. While the technical qualifications of the staff remained high, the numerous events experienced throughout the assessment period indicated that elements of the maintenance organization were not focused on sustaining superior performance. The improper placing of a ground buggy, a failure to properly lift and land electrical leads, and the use of improper correction factors during the setting of main steam safety valves were examples which reflected this declining performance.

The audits conducted by the quality assurance organization were supplemented by a department-level self-assessment. This initiative was new to the Diablo Canyon site and brought an improved technical quality to the performance review process and developed a sense of ownership which may promote improvement within the organization.

The performance rating in this functional area is Category 2.

IV. ENGINEERING

Overall engineering performance has been good. This represents a decline from the previous SALP period. In March 1995, engineering went through a significant effort to downsize, reorganize, and consolidate into a single onsite organization with a small portion remaining in the corporate office. This reorganization challenged management. Events showed that: group responsibilities within engineering were not always clearly bounded and understood by individual managers; lines of communication within engineering and with other site organizations at times did not work; control of the engineering work backlog did not prevent a significant increase in work items; workload management skills were stressed; implementation of the corrective action program did not always yield effective results; and operability evaluations were not always timely and thorough. This type of performance, similarly identified in the licensee's own self-assessment, was not characteristic of the engineering organization in the previous assessment period.

The engineering organization continued to initiate responsive programs to address significant issues such as the program to address the concern with main steam safety valves (MSSVs). The overall corrective action program can also be characterized as strong. However, despite responsive, responsible establishment of these and other programs to address significant issues, implementation and follow-through to a satisfactory conclusion was not consistent. For example, the MSSV augmented testing program initially lacked sufficient specifics to support an effective engineering evaluation or to identify actions to be taken based on test results.

An industry issue where engineering demonstrated good work was the determination of the accuracy of the plant's licensing basis. In response to this issue, the licensee performed their own assessment of the state of their licensing basis and found that it was lacking mainly in timeliness of updates. An initiative was undertaken to update the Updated Final Safety Analysis Report (FSAR) and supporting design documents.

The capability of the engineering organization to perform high quality work was demonstrated numerous times during this evaluation period. However, consistency was lacking. For example, operability evaluations were not always conservative or accurate given the information available at the time, and there was concern with the apparent lack of aggressiveness and timeliness in resolving problems that threaten continued plant operations. Examples included the inaccurate operability determination made and the delay in testing additional MSSVs when unacceptable results were obtained during periodic augmented testing; the slow response to address the 230 kV degraded voltage issue; and the protracted operability evaluation subsequent to engineering identifying an operability issue with the containment fan cooler units. Engineering's identification of this latter issue and of the high energy line break outside containment scenario, demonstrated significant engineering strength. Both issues became industry-wide issues.

System engineering support to operations and maintenance was typically a strength throughout the SALP period with the key exception of operability evaluations as discussed above. Engineers were found to be knowledgeable of their systems and interfaced regularly with maintenance and operations to address current issues.

Aggressive programs were established to train and qualify engineers in cross disciplines to allow more effective use of engineering personnel in a down-sized organization. The licensee appeared to be sensitive to the need to provide time to effect the training, despite the heavy workload of some engineers, because of the current lack of cross-trained, qualified engineers.

Engineering performed a number of thorough self-assessments, which combined with quality assurance audits were effective in identifying areas in need of improvement. Additionally, oversight groups were observed to be effective. Engineering generally demonstrated a strong safety focus and a positive approach to criticism.

In summary, engineering retained the capability to perform the high quality engineering work noted during previous SALP periods, but management was not always effective in providing adequate direction and oversight to ensure work products were consistently of high quality. With the help of self-assessments management recognized the challenges resulting from the engineering reorganization and by the end of the SALP period had initiated action to address them.

The performance rating in this functional area is Category 2.

V. PLANT SUPPORT

Overall performance in the plant support functional area retained its superior rating, but was marked by significant variations in the component programs. The radiation protection programs remained relatively strong, although the 3-year average exposure level for plant workers was considered average. The emergency preparedness program continued at a superior level, with offsite coordination with local government organizations noted as a strength. Performance in the security program was effective, but deficiencies were noted in the access authorization and materials search programs. The fire protection program and plant housekeeping programs supported effective and safe plant operations.

Continued strong performance was noted in the radiation protection program. A well trained and qualified radiation protection staff and an effective quality assurance audit program were positive contributors to solid performance, and the (ALARA) program helped reduce exposures. While the 3-year average exposure level approximated the national average, this indicator was dominated by exposures from 1994 plant modifications and the 100% eddy current testing of steam generators. More recent ALARA initiatives were successful, as demonstrated during the Unit 2 refueling outage when lessons learned in chemistry controls from the Unit 1 outage produced a significant reduction in the shutdown source term. Occasional shortcomings were noted in the areas of material and containment control, mostly due to a lack of attention to detail by radiation workers.

No emergency preparedness exercise was evaluated during the assessment period; however, the six unusual events that occurred provided evidence of effective emergency preparedness program performance. The site maintained interactive communications links with State and local government officials, and emergency response facilities were maintained in a proper state of readiness. The emergency response organization adopted a "team" concept of operations which resulted in a more balanced response capability. Self-

improvement initiatives included the intrusive and self-critical lessons learned sessions conducted after drills and events, and the establishment of the Emergency Response Forum.

The security program remained effective, but problems identified during the latter portions of the assessment period indicated a declining trend in performance. Examples of performance problems were: the instances of ineffective search processes for material entering the protected area which required extensive management attention; programmatic weaknesses in the access authorization program which resulted in an escalated enforcement action; and an excessive number of vital area access alarms which was due, in part, to the poor material condition of vital area doors. This program warrants additional management attention.

Overall, the fire protection and housekeeping programs were well implemented. The fire brigade was well trained and highly qualified. The response of the fire brigade to the auxiliary transformer fire was good; however, the blocking of the transformer area drain by site personnel indicated that broader-based training on fire protection concepts is warranted. Housekeeping practices were effective in providing for a safe and functional facility. Improvements were noted in the high traffic and emergency safety function work spaces.

The performance rating in this functional area is Category 1.

