

COMANCHE PEAK STEAM ELECTRIC STATION
SYSTEMATIC ASSESSMENT OF LICENSEE PERFORMANCE
Report 50-445/95-99; 50-446/95-99

I BACKGROUND

The SALP Board convened on November 28, 1995, to assess the nuclear safety performance of Comanche Peak Steam Electric Station for the period May 29, 1994, through November 25, 1995. The Board was conducted in accordance with Management Directive 8.6, "Systematic Assessment of Licensee Performance." The Board members included: K. E. Perkins (Board Chairperson), Director, Region IV Walnut Creek Field Office; K. E. Brockman, Deputy Director, Division of Reactor Safety; and W. D. Beckner, Director, Project Directorate IV-1, Office of Nuclear Reactor Regulation. This assessment was reviewed and approved by the Regional Administrator.

Functional Areas and Ratings:

	Current	Previous
Plant Operations	1	2
Maintenance	1	2
Engineering	2	1
Plant Support	1	1

II OPERATIONS

Overall, performance in the operations area improved during the assessment period. Operator professionalism, performance in day-to-day operations, and response to plant events was excellent. Strong management involvement, clear and well documented expectations, and very good communications with supporting divisions (involving Engineering, Maintenance, and Plant Support) contributed to the achievement of a superior level of performance.

Site management exhibited clear support for operations and operations management demonstrated strong oversight, accountability, and involvement throughout the period. Management expectations were clear and well documented. This was reflected in the high degree of operator professionalism, excellent performance in routine operations and transient response, and very good command, control, and communication among crew members including auxiliary operators. However, operations was not consistently successful as a demanding customer which resulted in a number of operator work-arounds. Continued management attention is needed to encourage operations management and operators to assert site focus on reducing work-arounds.

Programs and procedures for operations were generally excellent and, although isolated examples of weak or inconsistent procedures were identified during the assessment period, thorough and timely corrective actions to these situations were achieved. Programs for accomplishing the work control and clearance processes successfully reduced the number of clearance order errors.

NRC observations on the conduct of operations during the SALP period noted a generally conservative safety philosophy with regard to decisions on plant operations. Examples of conservative decision-making included the rescheduling of work on the Train A safety equipment during the Unit 2 refueling outage in order to allow for completion of the fuel unloading of the reactor core, and a prompt decision to reduce power in response to main feedwater pump speed oscillations. This is contrasted by instances where operations personnel have not exercised a high level of attention to detail and a thorough questioning attitude. These weaknesses resulted in reducing the refueling water storage tank level to below the Technical Specification minimum and overflowing the Unit 1 spent fuel pool (SFP) to the ventilation system, and in failing to promptly evaluate the cause of the elevated containment spray pump bearing temperature.

Management involvement and support for operator training was strong resulting in overall excellent operator performance, which contributed significantly to safe operations. Licensed operator initial examination results and licensed operator requalification program inspection results indicated that performance in these areas was good.

Operations department self-assessment and corrective action programs at CPSES were considered strengths. The corrective action program was effective in encouraging the identification and resolution of problems, particularly in the last six months. The program to review industry operating experience was effective in the timely identification of pertinent issues. Corrective actions were implemented and tracked to completion. Performance assessment audits were effective in identifying adverse trends and problems, and corrective actions implemented were effective.

The performance rating is Category 1 in this area.

III MAINTENANCE

Safety performance in the maintenance area was excellent and improved throughout the rating period. Plans and programs initiated during the previous SALP period matured and significantly contributed to improve overall maintenance performance. Material condition was good to excellent and reflected the licensee's commitment to overall plant reliability. Maintenance planning and scheduling continued to improve, with the operations notification and evaluation (ONE) form process appearing to be an effective means of identifying and correcting conditions adverse to quality. Some examples of craft personnel failing to follow procedures were noted during the SALP period.

Management provided the necessary attention and resources to the maintenance area. The maintenance department demonstrated a service-orientation, and developed effective communications channels with both engineering and operations. New facilities were built to provide more effective work areas, demonstrating a commitment to craft excellence. Focused efforts were placed on more accurately defining performance indicator criteria. This resulted in

accepting temporary decreases in indicated performance while bringing appropriate attention and resources to the areas of concern to assure a more accurate indication of performance over the long term.

Significant improvements were evident in the material condition of primary plant systems. The Fix-It-Now program was implemented to provide a concentrated means of dealing with emergent work items. This initiative proved to be a positive component of the changes made in the planning and scheduling processes, improving both preventive and corrective maintenance capabilities. By the end of the period, the maintenance backlog was significantly reduced.

In spite of the significant improvements, there remained some areas where performance improvement was warranted. The superior material condition achieved in the primary plant was not equivalently reflected in the secondary plant, resulting in instances of unplanned power reductions and operational challenges being caused by secondary plant malfunctions. This was most evident in the failure to aggressively repair the leaking steam admission valves, which contributed to the corrosion of the governor valve stem and resulted in the on-demand failure of the turbine-driven auxiliary feedwater (TDAFW) pump, an important safety-related component.

There were also instances of weak individual attention to detail which included procedure adherence, and weak oversight and control of contractor work practices which resulted in deficiencies in the in-service inspection efforts during the Unit 2 refueling outage.

An aggressive program of self-evaluation and correction had been implemented in the maintenance area. The maintenance organization conducted self-assessments that were in addition to the audits and evaluations conducted by the Nuclear Overview Department. The self-assessments employed both internally-constituted and externally-supplemented teams to review maintenance activities and processes. Management used the results to actively direct the evolution of the maintenance program, instead of reacting to external pressures.

The performance rating is Category 1 in this area.

IV ENGINEERING

Overall, safety performance in engineering during this period was considered good. The licensee's substantial, talented engineering staff generally provided strong support to the operation and maintenance of both units. Particularly noteworthy strengths in the engineering area were the design modifications to improve plant reliability, and the identification and resolution of problems. However, weaknesses were noted in the areas of inconsistent configuration control and planning, inconsistent troubleshooting and root cause evaluations, inconsistent corrective actions which resulted in repeat equipment challenges and in one case a plant trip, and a number of longstanding operator work-arounds.

The procedures for implementing engineering programs, with a few exceptions, were comprehensive and contained clearly delineated responsibilities, guidance, and instructions. The motor-operated valve program was considered to be particularly strong and effectively implemented. Engineering effectively supported operability reviews and determinations. However, inexplicit management expectations and an excessive workload for some system engineers contributed to some inconsistencies in the system engineering program implementation.

Engineering was strong in reacting to and correcting identified problems, but not always effective in anticipating and preventing problems. The TDAFW pumps on both units exhibited several problems that were still being evaluated late in the SALP period. TDAFW system drains were not considered by engineering to have a safety-related function and condensate accumulation was not adequately considered to assure satisfactory operation of the turbine. The comprehensive engineering support to operations and maintenance after the initial failure on demand of the Unit 1 TDAFW pump demonstrated the effectiveness of engineering attention in reactive situations.

The licensee's overall corrective action program was generally well structured and provided an effective process for identifying, resolving, and preventing the recurrence of plant problems. However, the engineering aspects of the corrective action program were inconsistent. The comprehensive and timely engineering resolutions to identified problems were at times more attributable to an individual engineer's initiative or perception of management expectations than the implementation of consistently, clearly defined responsibilities and management expectations. The failure of engineering to provide timely and comprehensive corrective actions led to several undesirable situations, such as: a repeat diesel generator fuel oil header tubing failure that placed the diesel generator in accelerated testing; SFP high level alarm setpoint discrepancies that contributed to a SFP overflow event; and repeat unrecognized containment design challenges from high feedwater preheater bypass line containment penetration temperatures. Additionally, ineffective troubleshooting and root cause evaluations resulted in two missed opportunities to correct a problem with a nonsafety-related inverter, which ultimately caused a reactor trip on loss of feedwater flow.

Plant configuration control and design modification implementation were generally very good with a few exceptions noted. Inconsistent application of the processes for the control of plant design resulted in a Unit 2 tornado damper being blocked open for six months, operation of Unit 1 without operable heat tracing on emergency boration piping, and some longstanding operator work-arounds not being acted upon when an engineering fix was known. Implementation planning for residual heat removal pump design modifications did not adequately identify the proper mode restraints.

The licensee's engineering work products were sound, showed a good safety focus, and represented a good technical capability, although at times overall management of engineering workload appeared to be somewhat reactive. Technical evaluations, operations notification and evaluation forms, and 10

CFR 50.59 evaluations effectively addressed the technical issues. Safety evaluations to support design modifications, temporary modifications, and minor modifications were well written and reflected conservative engineering practices. License amendment requests, exemption requests, and requests for relief usually contained thorough technical justifications for requested actions and appropriately addressed regulatory and safety issues.

The performance rating is Category 2 in this area.

V PLANT SUPPORT

Overall performance in the Plant Support area continued to be superior. Excellent performance was observed in the radiological controls area, with improvement noted since the previous SALP evaluation. Management oversight of work activities was good. Strong working relationships and communications channels were evident and contributed to the effective coordination of radiological controls practices. Overall personnel exposure levels were a recognized strength, due to effective as low as reasonably achievable (ALARA) practices and the minimal source term associated with the plant. The licensee implemented a comprehensive program of self-assessments and quality assurance audits, which contributed to the consistent, and continued, improving performance. Some examples of program implementation weaknesses were noted in individual attention to detail, procedural compliance and radiation worker practices (e.g., access control, personal dosimetry). The weaknesses detracted from the otherwise superior performance, and constitute an area where future management attention is warranted.

Evaluation in the emergency preparedness area was limited since no biennial exercise was conducted during the rating period. However, operational capabilities were evaluated through inspection and simulator walk-throughs. The capabilities of the emergency response organization in classifying and responding to events were good. Emergency response facilities were maintained in an acceptable condition. The development of position assistance documents was identified as a programmatic strength. Protective actions decision-making and the procedures for monitoring personnel evacuated from the site were identified as areas for improvement.

Performance in the security area was viewed as outstanding. The improvements noted during the previous period were fully realized. Management commitment was obvious, and the relationship between the contract guard force and licensee management was effective and mutually supportive. Individual attention to detail was evident in the implementation of program details. New technology, such as "biometrics" (hand-geometry) access control and "video capture," was evident. There were dedicated testing and maintenance resources for the security components and systems.

Implementation of the fire protection program met overall safety objectives. Fire response personnel, including fire watches, were knowledgeable of their duties, demonstrated sound training and qualifications, and maintained readiness through training and drills.

Housekeeping was exceptional. Licensee management committed extensive material and personnel resources to the cleanliness of the plant and the implementation of an effective and extensive painting and coatings program.

The licensee had an effective program of internal audits and surveillances in the plant support area. Radiation protection field activities were reviewed on a periodic basis; an emergency response director from another facility supported the audit of the Comanche Peak program; security audits were integral to determining that a positive relationship developed between the new department management and the contractor workforce. In response to nuclear oversight findings, corrective actions were, typically, thorough and comprehensive.

The performance rating is Category 1 in this area.