SALP BOARD REPORT

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

SYSTEMATIC ASSESSMENT OF LICENSEE PERFORMANCE

Commonwealth Edison Company

QUAD-CITIES NUCLEAR POWER STATION

Docket Nos. 50-254; 50-265

Reports No. 84-05; 84-04

Assessment Period

January 1, 1983 through May 31, 1984

I. INTRODUCTION

The Systematic Assessment of Licensee Performance (SALP) program is an integrated NRC staff effort to collect available observations and data on a periodic basis and to evaluate licensee performance based upon this information. SALP is supplemental to normal regulatory processes used to ensure compliance to NRC rules and regulations. SALP is intended to be sufficiently diagnostic to provide a rational basis for allocating NRC resources and to provide meaningful guidance to the licensee's management to promote quality and safety of plant construction and operation.

A NRC SALP Board, composed of the staff members listed below, met on July 26, 1984, to review the collection of performance observations and and data to assess the licensee performance in accordance with the guidance in NRC Manual Chapter 0516, "Systematic Assessment of Licensee Performance." A summary of the guidance and evaluation criteria is provided in Section II of this report.

This report is the SALP Board's assessment of the licensee safety performance at Quad-Cities Nuclear Power Station from January 1, 1983, through May 31, 1984.

SALP Board for Quad-Cities Nuclear Power Station:

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II. CRITERIA

The licensee performance is assessed in selected functional areas depending whether the facility is in a construction, preoperational or operating phase. Each functional area normally represents areas significant to nuclear safety and the environment,and are normal programmatic areas. Some functional areas may not be assessed because of little or no licensee activities or lack of meaningful observations. Special areas may be added to highlight significant observations.

One or more of the following evaluation criteria were used to assess each functional area.

1. Management involvement in assuring quality.

2. Approach to resolution of technical issues from safety standpoint.

3. Responsiveness to NRC initiatives.

4. Enforcement history.

5. Reporting and analysis of reportable events.

6. Staffing (including management).

7. Training effectiveness and qualification.

However, the SALP Board is not limited to these criteria and others may have been used where appropriate.

Based upon the SALP Board assessment each functional area evaluated is classified into one of three performance categories. The definition of these performance categories is:

Category 1. Reduced NRC attention may be appropriate. Licensee management attention and involvement are aggressive and oriented toward nuclear safety; licensee resources are ample and effectively used such that a high level of performance with respect to operational safety or construction is being achieved.

Category 2. NRC attention should be maintained at normal levels. Licensee management attention and involvement are evident and are concerned with nuclear safety; licensee resources are adequate and are reasonably effective such that satisfactory performance with respect to operational safety or construction is being achieved.

Category 3. Both NRC and licensee attention should be increased. Licensee management attention or involvement is acceptable and considers nuclear safety, but weaknesses are evident; licensee resources appear to be strained or not effectively used such that

minimally satisfactory performance with respect to operational safety or construction is being achieved.

Trend. The performance gradient over the course of the SALP assessment period.

III. SUMMARY OF RESULTS

Overall, during this period, the licensee's performance was found to be generally acceptable and directed toward safe facility operation. At the close of the previous SALP rating period the licensee's performance in the Operation functional area had shown a downward trend. This trend continued during the first part of the SALP rating period and accounts for the reduced rating in that area. Improvement in Operations was noted in the latter part of the evaluation period due in a large part to the implementation of a regulatory improvement program. In addition, improvement was reported in the Radiological Controls functional area and significant strengths were noted in Emergency Preparedness and Security with reduced inspection effort being recommended in the latter.

Functional Area	Rating Last Period	Rating This Period	Trend Within the Period
Plant Operations	2	3	Improved
Radiological Controls	2	~~1~~ 2*	Improved
Maintenance/Modifications	2	2	Same
Surveillance	1	1	Improved
Fire Protection	1	~~1~~ 2*	Same
Emergency Preparedness	2	1	Improved
Security	1	1	Improved
Refueling	1	1	Same
**Quality Programs and Administrative Controls	Not Rated	2	Same
Licensing Activities	1	1	Same

* Rating changed by Regional Administrator
**This is a new functional area for SALP period IV.

IV. PERFORMANCE ANALYSES

A. Plant Operation

1. Analysis

Portions of twelve inspections were performed by the resident inspector covering direct observation of operating activities, review of logs and records, verification of selected equipment lineups and operability, and followup of significant operating events to verify that facility operations were in conformance with the Technical Specifications and administrative procedures. Five items of noncompliance were identified as follows:

a. Severity level III - Failure to follow shutdown procedures (254/83-11-01)

b. Severity level III - Failure to follow administrative procedures (254/83-11-02)

c. Severity level III - Failure to maintain accurate records (254/83-11-03)

d. Severity level IV - Exceeding technical specification limiting condition for operation for secondary containment integrity (254/83-31-01)

e. Severity Level V - Failure to have procedures that addressed actions necessary to change status of main steam isolation valve room (254/83-31-02)

Items a. through d. were the result of personnel errors.

Items a., b., and c. were issued as a result of the March 10, 1983 rod insertion error. An Abnormal Occurrence Report was issued due to the significance of this event. Escalated enforcement action was taken in the form of a civil penalty of $150,000. Multiple enforcement conferences were held with members of corporate and plant management as well as with the operating staff.

The rod insertion error was considered by NRC to be very serious and a continuance of the downward trend in plant operations performance that was noted at the end of the SALP III assessment period.

Following the Enforcement Conference, aggressive corrective action was initiated by site management to ensure procedure adherence, operator attentiveness, and direct management involvement. Improvement in performance was noted by the resident inspectors; however, the corrective actions were apparently not fully effective because further problems were experienced as noted in item d. above.

The secondary containment event of November 10, 1983 was considered for escalated enforcement and an Enforcement Conference was held with corporate and site management; however, due to a change in NRC enforcement policy, this issue was classified a Severity Level IV violation, not warranting a civil penalty.

At the January 24, 1984 Enforcement Conference, site management presented a regulatory improvement program that had been instituted for Quad-Cities and several proposals that had been made to corporate management including the construction of an operations center to better coordinate plant operations. NRC regional management remarked at the lack of corporate involvement and the failure of corporate management to search out root causes and requested the submittal of a formal corporate-wide Regulatory Improvement Program (RIP). This plan was submitted on February 24, 1984. Pertinent aspects of the program included:

(1) Corporate directives for improving operating performance covering identification of potentially significant events, post-trip analysis prior to plant restart, and conduct of operations.

(2) Improved communications at all levels.

(3) Corporate site visits and a station management shift overview function.

(4) Corrective actions for personnel errors.

Subsequent to the implementation of the corporate-wide Regulatory Improvement Program, the resident inspectors noted significant improvement in this area. Corporate management is frequently involved in site activities. Site management's attitude and attention to regulatory matters and inspector concerns was very good. Events were promptly reported and corrective actions were timely and well thought out. There is consistent evidence of prior planning and assignment of work priorities. Staffing appears to be adequate although some occasional difficulties with backlog of procedures are experienced. The training program is well defined and is implemented with dedicated resources for a large portion of the staff. Regulatory performance improved along with a decrease in personnel errors.

Sixty-three LERs were submitted in the operations area during the assessment period. Five of these were attributed to personnel error of which two resulted in the events noted above. Six were the result of procedure deficiency and the remainder were caused by equipment malfunction. This distribution appears to be consistent with previous SALP periods; however, the significance of the procedure deficiencies and personnel errors was considered during enforcement actions. It is noted that no personnel errors were reported subsequent to the November secondary containment event.

Six reactor trips occurred on Unit 1 and four on Unit 2. Two of the ten trips were caused by contractor personnel inadvertently striking sensitive instrumentation, one by a procedure deficiency, three by personnel error, and four were caused by mechanical malfunctions. Only one of the scrams due to personnel error occurred subsequent to the secondary containment event, none following implementation of the RIP.

During the assessment period four Reactor Operator (RO) and twenty-two Senior Reactor Operator (SRO) examinations were administered to personnel at Quad-Cities station. Six of the candidates were retake examinations. Two RO and fifteen SRO candidates passed, which is below the national average passing rate of approximately 80%.

2. Conclusions

The licensee is rated Category 3 in this area. Although the improved performance and management involvement noted during the latter portion of the assessment period has been encouraging, the licensee is rated Category 3 in this area. The significance of the rod insertion error event and the downward trend in plant operations performance that was observed to carry over into the beginning of the Appraisal Period from SALP III were the major considerations in this rating. Continuation of the aggressive management involvement as noted in the latter portion of this assessment period coupled with no additional significant violations will result in an improved rating in this area.

3. Board Recommendations

Licensee management efforts should continue and should include methods of assessing affected improvements at the working level.

B. Radiological Controls

1. Analysis

Five inspections were performed during the assessment period by region-based inspectors. These inspections included environmental monitoring, confirmatory measurements, operational radiation protection, radwaste management, and refueling radiation protection. The resident inspectors also inspected in this area, concentrating on implementation of the ALARA program. No violations or deviations were identified.

In the radiation protection area, there was consistent evidence of prior planning, assignment of priorities, and timely resolution of NRC concerns during the assessment period. Management of the radiation protection program at the plant appears largely responsible for the licensee's good performance in this area. Resolution of problems noted in SALP 3 in this area have been adequate and timely.

Program support has been increased by addition of radiation protection foremen on all shifts, and additional engineering assistant and coordinator positions have been staffed to provide assistance in the radiation protection and ALARA programs. Additional improvements were made during this assessment period in survey instrument quality assurance controls.

Effectiveness of the ALARA program has significantly improved during this assessment period. The program now includes review of proposed plant modifications and work requests, and closer scrutiny of radiation work permits. Also, associated ALARA related matters such as general decontamination of facilities and decontamination of circulating system piping has resulted in significant dose reduction. As a result of circulating system piping decontamination, dose rates in the drywells were reduced by factors of two to twenty depending on location. Overall contamination control has improved.

Total worker dose (person-rems) during 1983 was less (20%) than the licensee's average annual dose over the last five years, and about average for U.S. boiling water reactors for 1983. This is a notable improvement.

The licensee's radiological effluents continue to be about average for U.S. boiling water reactors; there were no unplanned releases or transportation incidents during the assessment period.

Of forty comparisons in confirmatory measurements, the licensee had only one clear disagreement, for gross beta in waste water. A subsequent comparison on a spiked sample gave a possible agreement. This was a considerable improvement from the previous period when seven disagreements were observed. Three possible agreements reflected weaknesses in peak stripping software associated with the Automated Analytical Instrumentation System (AAIS) identified in 1982. The licensee's corporate office has agreed to have these deficiencies corrected by midyear 1984. Analysts at Quad-Cities are aware that there may be problems with some of the analytical results produced by these programs and perform an adequate review of the AAIS output. Additional training in this regard was provided by the corporate office at the request of NRC inspectors.

Overall, laboratory equipment was reasonably well maintained and analysts were generally competent and willing to correct identified problems.

Station analysts did appear somewhat uncertain regarding the alpha counting system originally established and maintained by corporate personnel. They appeared unable to explain the basis of ampifier and discriminator settings which resulted in an unusually low alpha efficiency. This problem was addressed by acquiring counters of a different type and by initiating comparisons between counters and with two outside laboratories.

The environmental monitoring program appears well-implemented, largely under contract. Plant personnel were able to locate and get into the sampling stations although they are normally serviced by contractor personnel. A problem with improperly installed and missing flow meters on environmental air samplers were noted by the inspectors. The meters were somewhat redundant in that the samplers were regulated constant flow devices which are field checked monthly for proper calibration. Nevertheless, this finding indicated some weakness in program oversight, and the licensee agreed to ensure that the flow meters are properly installed and that readings are recorded when samples are changed.

2. Conclusion

The licensee is rated Category 1* in this area. Worker radiation doses are more reflective of Category 2 performance, but licensee efforts to reduce the plant radiation environment and a substantial downward trend in worker doses during this assessment period are indicators of better performance.

3. Board Recommendations

The Board notes that the recent inspection concerning confirmatory measurements, although outside this evaluation period, reflects positively on the licensee's overall performance in this area. Normal inspection frequency should continue.

C. Maintenance/Modifications

1. Analysis

The resident inspectors routinely inspected the licensee's activities in this area, concentrating on implementation of procedures and design modifications. The resident inspectors also, by direct observation, verified that the limiting conditions for operation were met while components or systems were removed from service; approvals were obtained prior to initiating the work; activities were accomplished using approved procedures and were inspected as applicable; functional testing and/or calibrations were performed prior to returning components or systems to service; quality control records were maintained; activities were accomplished by qualified personnel; parts and materials used were

*Rating changed by Regional Administrator to Category 2.

properly certified; radiological controls were implemented; and, fire prevention controls were implemented.

Work requests were reviewed to determine status of outstanding jobs and to assure that priority was assigned to safety related equipment maintenance which may affect system performance.

Two special inspections and four routine inspections were conducted by regional-based inspectors. The scope of one special inspection included review of activities surrounding the attempted removal of torus containment penetration X-215 and routine inspection of maintenance activities.

During the review of the licensee's maintenance and design analysis program, one item of noncompliance and one unresolved item were identified:

> Severity Level IV - Failure to ensure that measures were established to assure that the design basis for those structures, systems and components are correctly translated into drawings and instructions. (50-254/83-19-01)
>
> Unresolved Item - No station personnel possessing adequate plant operational knowledge were involved in review of work packages for operating plant interfaces. (50-254/83-19-02)

The inspectors determined that this was an isolated occurrence following review of approximately 1400 other modifications in which no other problems were identified.

The licensee has taken action to improve performance for both of the above items in a timely and effective manner.

The second special inspection addressed licensee action on IE Bulletin 80-11: "Masonry Wall Design." Several walls (32) required strengthening. The structural modifications were being accomplished at the time of the inspection.

No items of noncompliance were identified and proper management attention was evident.

Five violations were identified during routine inspections of the licensee's actions concerning IE Bulletin 83-02 (Items (1), (2), and (3)) and 79-14 (Items (4) and (5)) as follows:

(1) Severity level V -- Failure to establish adequate design procedures for torus penetration piping and support base plate analysis. (254/83-04-05; 265/83-04-05)

(2) Severity Level V -- Failure to maintain adequate document control in that procedures were implemented prior to formal review and approval. (254/83-04-06; 265/83-04-06)

(3) Severity Level V -- Failure to conduct adequate QA audits of consultant activities. (254/83-04-09; 265/83-04-09)

(4) Severity Level V -- Failure to conduct adequate IE Bulletin 79-14 walkdown inspections and engineering reviews of as-built data. (254/83-13-01; 265-83-11-01)

(5) Severity Level V -- Failure to follow design procedures in the evaluation of branch anchor seismic movements. (254/83-13-02; 265/83-11-02)

The licensee's corrective actions for the above noncompliances were reviewed and the items closed during subsequent inspection. These noncompliances were of minor safety significance and they did not appear to indicate any programmatic problems.

The examination into IE Bulletin 83-02 inspection activities included a review of UT procedures, personnel certifications, material and equipment certifications, data reports and observation of several ultrasonic examinations at the site. Based on these efforts the inspectors determined that UT procedures, calibration standards, equipment and Intergranular Stress Corrosion Cracking detection capabilities were satisfactorily demonstrated in accordance with IE Bulletin 83-02 and that the same procedures and techniques were used in the UT examinations. The inspectors also observed the welding of some overlays and determined that the weld overlay repairs were performed in accordance with qualified and approved procedures. In addition, the decon and the induction heating stress improvement treatment performed on the recirculation system piping was observed to confirm that these activities were conducted in accordance with approved procedures. The licensee's actions in response to this Bulletin constituted a program of major proportions resulting in extended outages for both units and the expenditure of significant manhours over many months. Only minor items of noncompliance were identified (Items (1), (2), and (3) above) and no programmatic problems were reported.

The matter concerning control of off-site design contractors through effective and timely audits identified in Item (3) above was discussed at the Commonwealth Edison corporate offices on May 23 and June 29, 1983. In addition, implementation of the licensee's design audit program was examined at the contractors offices during this SALP assessment period. There was significant improvement in this area over the previous inspection indicating the licensee's responsiveness to NRC concerns.

Inspections conducted to review the licensee's implementation of the IE Bulletin 79-14 piping re-evaluation program are complete. The licensee's efforts in this area were substantial and have satisfied the bulletin requirements. During a review of the piping re-evaluation program which included followup on the licensee's actions to comply with a Confirmatory Action Letter (CAL) issued July 14, 1982, the licensee stated that they were going to perform additional evaluations on 950 "no action supports". Supports installed in piping systems that met the original Blume rigid span criteria during the piping stress analysis review and as a result, required no further evaluation to comply with IE Bulletin 79-14 requirements are classified as "no action supports". At the conclusion of a meeting held at Region III on July 8, 1983, to discuss "no action supports" the licensee agreed to provide certain additional information. The above CAL will remain open pending our followup inspection of the licensee's evaluation/information provided for the "no action supports". Only minor items of noncompliance were identified (Items (4) and (5) above) and no programmatic problems were reported.

On April 13, 1983 a Confirmation of Action Letter (CAL) was issued to all Commonwealth Edison facilities to confirm actions regarding the introduction of foreign materials and the sealing surfaces of the main steam isolation valves. This issue had been identified at Dresden Station and upon further investigation was found not to occur at Quad-Cities Station. The licensee instituted measures to ensure that it would not occur in the future. Thus, this issue is considered closed at this facility.

On May 2, 1984 it was determined by the resident inspectors that the 125V station batteries were loaded in excess of their design electrical capacity by the addition of various loads created by several modifications over an extended period of time. On May 7, 1984 a Confirmation of Action Letter was issued to confirm licensee actions to reduce electrical loads on the batteries during normal operations, necessary additional reductions in the event of an incident, and required licensee reviews and submittals to resolve NRC concerns. This issue is currently under review by NRR to determine safety significance and possible generic implications. Enforcement action may be taken pending this review.

Except as stated above, the activities observed, the management controls used, and the records and record control systems in place met requirements. There was evidence of prior planning and assignment of priorities. Policies were adequately stated and generally understood. Personnel involved in the areas reviewed were properly trained and certified. Although multiple violations

were identified, they were minor in nature and not an indication of programmatic breakdowns. Responses to NRC initiatives and identified concerns were generally timely with viable, sound, and thorough. The licensee's audit reports were found to be generally complete and thorough.

Several initiatives have been accomplished or are planned by the maintenance staff to improve their maintenance performance and their ALARA performance. These include:

(1) Placing work requests on a computer for ease of tracking.

(2) Quick disconnect on main steam isolation valve limit switches for dose reduction.

(3) Foremen required to tour plant daily to observe maintenance being performed.

(4) Modified scoop tube and bearings on the Recirculation pump drive motor to yield smoother flow characteristics.

(5) First trip annunciator installed on turbine to help identify turbine trips.

(6) Traveler form added to work requests to ensure better management oversight, improved communications, and better definition of the scope of work to be performed for safety related, reliability related and ASME Code related modifications.

Items (3) and (6) above are in response to weaknesses noted in SALP III.

One LER was issued as a result of personnel error which is a significant improvement over the last assessment period. The safety significance of the error was not severe and the licensee took prompt and effective corrective actions.

2. Conclusions

The licensee is rated Category 2 in this area. This rating is unchanged from the previous assessment period. The licensee's performance has remained essentially constant over the SALP assessment period.

3. Board Recommendations

None.

D. Surveillance

1. Analysis

During the assessment period, the resident inspectors routinely inspected this area, concentrating on implementation of procedures. The resident inspectors also, by direct observation, verified that procedures were adequate, that test instrumentation was calibrated, that limiting conditions for operation were met, that removal and restoration of the affected components were accomplished, that test results conformed with Technical Specifications and procedure requirements and were reviewed by personnel other than the individual directing the test, and that any deficiencies identified during the testing were properly reviewed and resolved by appropriate management personnel. Also, two inspections by regional-based inspectors were performed.

One inspection was conducted in the area of containment integrated leak rate (CILRT) testing. No items of noncompliance were identified. The CILRT was well conducted by qualified personnel and no significant issues were identified.

The second inspection performed by regional-based inspectors examined the current program and procedures, material and equipment certifications, personnel certifications, data reports and audit reports. In addition, work was observed and discussions were held with personnel performing inservice inspection activities. This inspection consisted of multiple reviews at several locations over a seven month period. No items of noncompliance were identified. The management control systems met regulatory requirements; and personnel, equipment and material certifications were current and complete. Records were found to be complete, well-maintained and available. Discussions with licensee and contractor personnel indicated that they were knowledgeable in their job; records indicate they were properly trained and certified. The licensee's audit reports were found to be generally complete and thorough.

The resident inspectors identified one item of noncompliance with two examples (Severity Level IV - 50-265/83-18-01) where contrary to Technical Specification requirements, isolation valves were left in improper positions both during and after surveillance testing. The corrective action was effective as indicated by the lack of subsequent repetition. This item is not considered a significant problem and the enforcement record has improved from the previous SALP assessment.

One LER was issued concerning missed surveillances found during a supervisory review by the Operating Engineers. The safety significance of these missed surveillances was minimal in that several were being performed by other departments concurrently

and others had been performed, but, were not documented. This does not appear to be a problem at this facility; however, the resident inspectors will continue to monitor this area.

Surveillance procedures are strictly adhered to. Also, surveillance records were found to be complete, well maintained and readily available for review. Response to NRC initiatives, inspector-identified concerns and safety issues were timely, technically sound and thorough in almost all cases. Events and deviations are promptly and completely reported. Staffing is adequate at this time, although consideration should be given to increasing staff levels to accomplish more "balance of plant" requirements.

2. Conclusions

The licensee is rated Category 1 in this area as in the previous assessment period. While this is the same rating as last assessment period, additional improvement in performance was noted.

3. Board Recommendations

The Board notes that subsequent to the assessment period the resident inspectors have identified a potential weakness in the surveillance program concerning calibration of safety related equipment and instruments used for safety related surveillances. Resolution of these concerns is pending further review by the inspectors and the licensee, and will be considered in the next assessment period.

E. Fire Protection and Housekeeping

1. Analysis

Throughout the assessment period, the resident inspectors have observed the implementation of the licensee's program in these areas.

During the assessment period, the licensee has been involved in two major maintenance outages. Daily observations of general site conditions indicate that a very effective housekeeping program continues as a result of management's involvement and attention in this area.

The resident inspectors also observed that routine fire prevention is practiced at the facility. During any maintenance outage many more fire protection related procedures are involved (welding, cutting, etc.) than during normal operation. However, during the two major maintenance outages experienced this assessment period, no items of noncompliance were identified. This is a result of management's aggressive attitude toward fire prevention.

Two fire protection related LERs were reported; one involving the diesel fire pump (battery failed) and the other involving a personnel error where two fire stops were found to be not intact during the annual firestop inspection. The first event was resolved by replacement of that diesel's batteries. As a conservative measure, the battery for the other diesel was also replaced. For the second event, the licensee immediately repaired the fire stop and performed an intensive investigation to determine the exact cause. After an inconclusive search, the licensee assumed personnel error and counseled/trained all employees and contractors in the importance of fire stops.

Management's continued attention and workers' cooperative attitude have resulted in a very effective program.

Concerns have arisen with respect to the scheduling and implementation of specific requirements of 10 CFR 50 Appendix R. Although substantial efforts have been expended by the licensee in this regard, Quad-Cities Station is pursuing full conformance with the applicable requirements. Appraisal of this aspect of the Fire Protection program has accordingly been held in abeyance.

2. Conclusion

The licensee is rated Category 1* in this area. The licensee's performance in housekeeping and other aspects of fire protection essentially remained constant over the course of the SALP assessment period.

3. Board Recommendations

The licensee is encouraged to continue the current level of management involvement in the existing fire protection program and to extend that involvement as necessary to the implementation of the broader fire protection issues contained in Appendix R to 10 CFR Part 50. An Appendix R inspection should be scheduled consistent with the licensee's final implementation of applicable requirements.

F. Emergency Preparedness

1. Analysis

Four inspections were conducted to evaluate compliance with 10 CFR Part 50, Technical Specifications, and procedures. One item of noncompliance was identified during these inspections:

> Severity level V -- Failure to submit controlled copies of several Emergency Plan Implementing Procedure revisions to the NRC within 30 days of their issuance. (50-254/83-26; 50-265/83-25)

*Rating changed by Regional Administrator to Category 2.

The noncompliance was due to inadequate records keeping regarding procedure distribution to offsite holders of procedures manuals by the corporate office.

Followup inspections were conducted to evaluate licensee actions on items identified during the 1982 Emergency Preparedness Implementation Appraisal. Adequate corrective actions had been completed on all items. The emergency planning staff and management had a positive attitude towards improving the already acceptable state of onsite emergency preparedness. Responses to NRC concerns typically were prompt and adequate, sometimes being completed prior to issuance of the NRC report. Corporate actions to address the generic concerns identified in our previous SALP report have been implemented, and resulted in substantial upgrading of offsite preparedness. In addition, corporate staff is continuing to work with the State of Illinois to upgrade the notification process, although Quad-Cities Station personnel had acted promptly upon emergency declarations to ensure that offsite notifications were completed within regulatory requirements. Sufficient numbers of staff had received excellent training for appropriate emergency response positions. Timely staff augmentation had been demonstrated by several off-hours drills. The licensee's overall performance during the 1983 exercise was a significant improvement over that observed in the previous exercise. An improved working relationship between the licensee and offsite emergency response organizations was evident from several scenario development meetings. The performance of exercise participants was among the best for all exercises conducted in the Region.

2. Conclusion

The licensee is rated Category 1 in this area.

3. Board Recommendations

This area should be considered for reduced inspection effort.

G. Security and Safeguards

1. Analysis

Two physical protection and one material control and accountability inspections were conducted by region-based inspectors during the evaluation period. Also, the resident inspectors routinely conducted observations of security activities, concentrating on implementation of procedures. No items of noncompliance were identified for this evaluation period.

The inspection conducted during this evaluation period showed improvement in the areas of training, communication, and understanding towards correcting material control and accountability practices.

The licensee continues to have a strong management program at the site level. Security policies and procedures are uniformly implemented and security awareness at the site appears higher than in the previous evaluation period.

Corporate involvement in site activities has increased and corporate and site management are frequently involved in decision making and reviewing actions that are taken or planned. Licensee management responses are technically sound and thorough and respond to NRC concerns in a timely manner. Corporate involvement should continue to be increased to relay analyses of security deficiencies, incidents, and potential impact of such instances from other Commonwealth stations to the Quad-Cities station in order that similar incidents or deficiencies may be reviewed by site management and acted on in an appropriate and timely manner.

Licensee reports of safeguards events are promptly and completely reported. The events are properly identified and analyzed and corrective action is effective as indicated by lack of repetition.

Safeguard staffing at both the corporate and site level is ample to implement the security program. Positions are identified, and authorities and responsibilities are well-defined. The staffing and management of the onsite contract guard force is adequate. The licensee has stressed and implemented excellent communication between security personnel and site management. The benefits of this are evidenced by an increase in guard morale over the last evaluation period.

The licensee implemented the personnel training and qualification plan on schedule (March 19, 1983). The licensee's program makes a positive contribution. This training program was demonstrated by adherence to security procedures with few personnel errors. Security personnel onsite are qualified and have a good understanding of security practices.

Comparisons with the previous SALP evaluation showed an increase in the effectiveness of the security system as evidenced by, for example, a decrease in the number of identified noncompliances.

2. Conclusion

The licensee is rated Category 1 in this area. This is the same rating as in the previous SALP period.

3. Board Recommendations

Consideration should be given towards continuing to reduce the level of routine inspection effort.

H. Refueling

1. Analysis

During the assessment period, NRC examination of this area consisted of portions of four resident inspections. No significant areas of concern and no items of noncompliance were identified in this area during either of the refueling outages experienced. The inspections indicated that licensee management's attention and involvement were oriented toward nuclear safety.

Work performed during the outages included recirculation system weld examinations and overlay repairs as well as repairs to the reactor water cleanup system. Other work involved turbine inspections, Mark 1 containment modifications, and work related to TMI action items and IE bulletins. The total outage time was 13 weeks for Unit 1 and 24 weeks for Unit 2. (Unit 1 remained in an outage status at the close of this assessment period.)

The resident inspectors noted that refueling operations were conducted very smoothly from plant shutdown through post refueling startup. With the extensive nature of the outages, no handling problems were noted, no overexposures or medical emergencies occurred, and startup of Unit 2 after refueling was without many of the problems frequently experienced after extended outages.

There is consistent evidence of prior planning and assignment of priorities. Well stated, controlled and explicit procedures exist for the control of refueling activities. Personnel staffing is adequate; positions are well identified as well as the authority and responsibility of each position.

2. Conclusion

The licensee is rated Category 1 in this area. The licensee has maintained the same high level of performance as in previous SALP assessments.

3. Board Recommendations

None.

I. Quality Programs and Administrative Controls

1. Analysis

Routine observations by resident inspectors were made in this area as well as one special inspection concerning followup of licensee response to allegations of improper operation. The resident also performed followup inspections on various events and reportable occurrences. No items of noncompliance were identified specifically for this area, although aspects of noncompliances in other functional areas may be considered in this section.

The special inspection verified that the licensee had established and implemented programs as described in their response to improve the weaknesses identified by the NRC. These weaknesses were identified and considered in the last SALP assessment period and were generic to all Commonwealth Edison facilities. No items of noncompliance were identified.

As a result of a large number of civil penalties issued to Commonwealth Edison Company during 1983 and 1984, a Regulatory Improvement Program was instituted on a company-wide basis. Steps were taken in the areas of management organization and personnel error reduction to improve regulatory performance. Specific aspects of the program are discussed in Section IV.1.a. The program went into effect in February 1984, however, Quad-Cities Station had already implemented various aspects of the program as early as November 1983. While personnel errors appear to be less frequent, it is too early to evaluate the program's effectiveness.

Some positive aspects of the licensee's management and quality program administration include: (1) Quality Assurance (QA) and Quality Control (QC) groups have ample staffing to support their workloads, (2) QC hold points coverage appears to be increasing, (3) Backshift coverage by QC and QA auditors is more evident, and (4) the QA audit program is well run.

In general, the quality programs examined during the assessment period appeared well established and well administered.

2. Conclusion

The licensee is rated Category 2 in this area. Although this is a new functional area and was not rated in the last assessment period, the licensee's performance appears to have been steady during this rating period.

3. Board Recommendations

None.

J. Licensing Activities

1. Analysis

This evaluation was based on review of the following licensing activities:

Project Management Administration, Units 1/2
Response to NUREG 0737 items, Units 1/2
Reload for Cycle 7, Unit 2
Pipe crack issue, Unit 2
Decontamination of recirc. pipe, Unit 2

Pipe crack issue, re-examination of Unit 1
Decontamination of recirc. pipes, Unit
Dose reduction study program, Unit 1/2
Pipe-lock demo program, Unit 1
Barrier fuel program, Unit 2
Inservice inspection program, Units 1/2
NUREG 0737 Tech Specs, Units 1/2
Economic Generation Control, Units 1/2
SPDS, Units 1/2
Environmental qualification, Units 1/2
125V DC power supply issue, Units 1/2
Masonry wall design, Units 1/2
Fire protection program, Units 1/2
DeMinimus radioactivity releases, Units 1/2
Shutdown margin demonstration
("Unplanned Criticality"), Unit 2
Eight additional Tech Spec Change Licensing Actions

The licensee's approach to resolution of technical issues demonstrates a mature knowledge of licensing issues. They have extensive experience in the industry and have acquired a scope and depth of technical expertise in all important areas. They participate actively in roles of leadership in Owner's group and professional organization activities.

Evaluations by the NRC technical review staff indicate that the licensee has a good understanding of all technical issues, and generally works constructively with the NRC staff to resolve such issues. Meetings and conference calls with the licensee are usually very productive and are characterized by excellent preparation on the part of the licensee. Of several examples that could be cited, the ongoing issue of large pipe crack inspection and repair is a good example. The licensee's expertise brought to bear on the problems, and the licensee's approach to resolution of these complex issues, has been effective.

When issues occasionally arise when it is found that the Quad-Cities Station does not conform to current design specifications, criteria or procedures, the licensee can generally readily demonstrate justification for continued operation or propose modifications to achieve or restore the desired level of conformance with current standards.

There has been a history of open and effective communication between NRC and the licensee's staffs. This situation promotes prompt and technically sound responses to NRC initiatives. Commonwealth Edison invariably meets all established commitment dates or provides a timely written submittal explaining the circumstances and establishing a new firm date. When a conference call or meeting is requested by the NRC staff to pursue an NRC initiative, the licensee is prompt and cooperative in making available the most appropriate and best informed individuals to discuss and pursue resolution with the NRC staff.

The licensee's responsiveness to NRC initiatives is typified by their actions taken to resolve nearly all of the NUREG 0737 action items. More specific recent examples are the timely and quality responses to our stated concerns regarding their 125V DC power supply, and the shutdown margin test when starting up Unit 2 after the last refuel outage. Other examples of the licensee's responsiveness to NRC initiatives have been their cooperation in several special studies involving Quad-Cities Station; e.g., the dose reduction study, the "truck bomb" survey/study, the decontamination evaluation. In these and other NRC-initiated actions, station and corporate resources were of invaluable aid.

A most characteristic feature of the interaction between NRC/licensing and Commonwealth Edison as a licensee has been the licensee's openness and positive attitude in responding to NRC initiatives. The timeliness and quality of responses related to licensing action suggest that staffing is adequate to accomplish the required work.

2. Conclusion

The licensee is rated Category 1 in this area. This level of performance is consistent with that of the previous SALP.

3. Board Recommendations

None.

V. SUPPORTING DATA AND SUMMARIES

A. Licensee Activities

Units 1 and 2 engaged in routine power operation throughout most of SALP 4. A major scheduled outage for plant refueling, modification, maintenance and inspection of recirculation piping pursuant to Commission Order 7590-01 was conducted from September 4, 1983, to February 18, 1984, for Unit 2 and a similar outage began on March 6, 1984, with a scheduled completion date of July 31, 1984 for Unit 1.

The remaining outages throughout the period are summarized below:

Unit 1

March 10 to 15, 1983	Clean main condenser tubes
May 21 to 22, 1983	Repair leak on continuous reactor head vent line
September 15 to 21, 1983	Routine maintenance

Unit 2

January 28 to February 3, 1983	Repair 2C circulating water pump
March 25 to 30, 1983	Clean main condenser tubes
February 19 to 20, 1984	Repair valve packing leaks
February 25 to 27, 1984	Replace 'B' recirculation pump suction valve
April 27 to May 8, 1984	Replace 2A circulating water pump discharge valve

Unit 1 was scrammed six times and Unit 2 was scrammed four times. Two of the Unit 1 scrams and two of the Unit 2 scrams were attributed to equipment malfunctions that required minor maintenance prior to returning the units to service. The remaining trips (four for Unit 1 and two for Unit 2) were attributed to personnel error and are further discussed in Section IV.1.a. Licensee management corrective actions following these trips were appropriate. The above personnel errors were taken into account when considering the licensee's Regulatory Improvement Program. In all cases, the plant responded as designed.

B. Inspection Activities

Noncompliance Data

Facility Name: Quad-Cities Nuclear Power Station, Units 1 and 2
Docket Nos. 50-254; 50-265.

Inspections: No. 83-01 through 84-04

Functional Areas Assessment	Noncompliances and Deviations Severity Levels					
	I	II	III	IV	V	
A. Plant Operations			3	1	1	
B. Radiological Controls						
C. Maintenance				1	(5)	
D. Surveillance and Inservice Testing				1*		
E. Fire Protection and Housekeeping						
F. Emergency Preparedness					(1)	
G. Security and Safeguards						
H. Refueling Activities						
I. Licensing Activities						
J. Quality Programs and Administrative Controls						
TOTALS	0	0	3	3	1(6)	0

Numbers in parenthesis indicate noncompliance common to both units.
* indicates noncompliance specific to Unit 2. (The balance were docketed to Unit 1)

No major team inspections were performed during this evaluation. However, FEMA did issue a report addressing the May 11, 1983, emergency exercise which concluded that an adequate level of offsite radiological preparedness had been demonstrated to protect the public in the event of a radiological accident at the Quad-Cities Nuclear Power Station.

C. Investigation and Allegation Review

None.

D. Escalated Enforcement Actions

1. A Civil Penalty in the amount of $60,000 was issued in 1983 for noncompliance involving operation in the previous SALP period outside a limiting condition for operation (LCO) when sufficient information was available to recognize that an LCO existed.

2. A Civil Penalty in the amount of $150,000 was issued in 1983 for noncompliances involving improper insertion of rods during shutdown. Details are to be found in inspection report 50-254/83-11.

E. Management Conference Held During Appraisal Period

1. Confirmation of Action Letters (CAL)

   a. A CAL was issued April 13, 1983, to confirm licensee actions regarding the introduction of foreign materials onto the sealing surfaces of the main steam isolation valves. This issue was generic to all Commonwealth Edison facilities identified at Dresden Station.

   b. A CAL was issued May 7, 1984, to confirm licensee actions regarding the 125 volt station batteries and actions to be taken in case of emergencies. Evaluations are still ongoing to determine final resolution.

2. Management Conferences

   a. January 26, 1983 (Glen Ellyn, Illinois): Management meeting to discuss proposed CECO guidelines for CECO personnel to be used for providing information to NRC Region III inspectors.

   b. February 17, 1983 (Glen Ellyn, Illinois): Management meeting to discuss Region III staff views on root causes of past problems and suggestions of regulatory improvement.

   c. March 18, 1983 (Glen Ellyn, Illinois): Management meeting to discuss the status of offsite emergency planning at Quad-Cities.

   d. March 29, 1983 (Glen Ellyn, Illinois): Enforcement Conference to discuss operator actions taken during a controlled shutdown (improper rod sequence).

   e. April 8, 1983 (Quad-Cities Site): Enforcement Conference with licensed operators. Operator errors which resulted in incorrect control and sequencing during a recent Unit 1 shutdown.

   f. May 12, 1983 (Glen Ellyn, Illinois): Management meeting to review Systematic Assessment of Licensee Performance (SALP III).

   g. May 23, 1983 (CECO Corporate Offices): Meeting to discuss recent inspection findings that indicate CECO QA audits are not being conducted in sufficient depth to verify the technical adequacy of design.

   h. July 26, 1983 (CECO Corporate Offices): First of a series of management meetings to discuss ways to improve overall CECO regulatory performance.

i. August 19, 1983 (Glen Ellyn, Illinois): Management meeting to discuss safety related pipe supports which were originally analyzed by using the Blume criteria.

j. September 9, 1983 (CECO Corporate Offices): Second in a series of meetings to discuss ways to improve overall CECO regulatory performance.

k. October 19, 1983 (Aurora, Illinois): Third in a series of meetings to discuss ways to improve overall CECO regulatory performance.

l. October 21, 1983 (Quad-Cities Site): Enforcement Conference to discuss incorrect operator performance during rod sequencing during a recent shutdown.

m. January 24, 1984 (Glen Ellyn, Illinois): Enforcement Conference to discuss personnel errors resulting in a loss of secondary containment integrity.

F. Review of Licensee Event Reports and 10 CFR 21 Reports

1. Licensee Event Reports

On August 29, 1983, the NRC published an amendment clarifying its regulations regarding Licensee Event Reports (LERs) required by 10 CRF 50.73. Details of the new reporting system were published as NUREG 1022 (Licensee Event Report System.) The effective date of this amendment was January 1, 1984. The new rule deleted reporting requirements for several types of LERs which had been found, through experience, to be of little value to the Commission. Therefore, LER data for this SALP period are not comparable with previous statistics.

Unit 1	Unit 2
LERs No.	LERs No.
83-01 through 83-48	83-01 through 83-25
84-01 through 84-05	84-01 through 84-04

Proximate Cause Code	SALP II*	SALP III**	SALP IV***
Personnel Error A	12	8	12
Design Deficiency B	4	3	4
Defective Procedures D	0	0	6
Component Failure E	70	40	46
Others X	3	10	14
	89	61	82

* SALP II was an 18 month evaluation.
** SALP III was a 12 month evaluation.
*** SALP IV was a 17 month evaluation.

LERs were issued at approximately the same rate during the SALP 4 assessment period as during SALP 3, except for those caused by personnel error. Additional discussion on personnel errors is discussed in Sections IV.1, IV.3, and IV.4. LERs due to defective procedures occurred more frequently during the assessment period; however, the numbers involved are so small as to make statistical comparison difficult.

In addition, changes in the LER system have made LER data for this SALP period not completely comparable with previous statistics.

The Office of Analysis and Evaluation of Operational Data reviewed the LERs for this period and concluded that the information given presented a clear and adequate description of each event; the entries reviewed appeared to be essentially correct and the system code agreed with the information in the narrative. Supplementary information was provided for most of the LERs. The licensee promised 18 followup LERs and provided 15. The remaining 3 are expected during the next assessment period. The licensee appropriately referenced similar prior occurrences as necessary. No significant deficiencies were found in the LERs reviewed.

2. 10 CFR 21 Reports

No 10 CFR 21 reports were submitted during the assessment period.