Enclosure 4

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4F.190

ILLINOIS POWER COMPANY

CLINTON POWER STATION, P.O. BOX 678, CLINTON, ILLINOIS 61727

Docket No. 50-461

February 23, 1990

Mr. A. B. Davis
Regional Administrator
Region III
U.S. Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, Illinois 60137

Subject: Response to the Systematic Assessment of Licensee Performance

Dear Mr. Davis:

This letter provides the Illinois Power Company (IP) response to the Nuclear Regulatory Commission's (NRC's) ninth Systematic Assessment of Licensee Performance (SALP 9) for the Clinton Power Station (CPS). SALP 9 covered the period from September 1, 1988 through October 31, 1989.

The SALP 9 report concluded that overall CPS performance was satisfactory, and identified strengths in the areas of operator knowledge of routine operations, use of off-normal procedures, and emergency preparedness.

The report also identified areas where improvements could be made. These areas include teamwork, communication and cooperation between all management levels and between management and the staff, procedural adherence, corrective actions, root cause determinations, engineering support to operations, plant material condition, and control of contractors.

On January 9, 1990, IP management met with the NRC to discuss, among other things, the 1990 initiatives for CPS. These initiatives address the planned corrective actions to improve in the areas of teamwork and communication, procedural adherence, the corrective action program, and plant material condition. Indicators to measure the effectiveness of the corrective actions have been identified and are being reviewed and evaluated by department managers on a regular basis. The corrective actions and indicators for each of these areas are discussed in Attachment A.

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In the SALP-9 report the NRC requested that IP provide a description of the actions being taken to improve performance in the areas of Engineering/Technical Support and Outages, which received Category 3 ratings. Specific actions to improve performance in these areas are described in Attachments B and C, respectively. The improvements which have been and are being made in the areas of engineering support to operations and control of contractors are also discussed in detail in Attachments B and C respectively.

IP believes that the initiatives discussed in Attachment A and the improvements discussed in Attachments B and C regarding Engineering/Technical Support and Outages will increase the level of performance at CPS during the SALP 10 period and future years at CPS.

We recognize that this year contains major milestones by which the effectiveness of our improvements and initiatives will be measured. We look forward to this challenge.

Sincerely yours,

J. S. Perry
Vice President

TSA/krm

Attachments (4)

cc: NRC Clinton Licensing Project Manager
NRC Resident Office
Illinois Department of Nuclear Safety

199^ Initiative Areas

This attachment describes some of the 1990 initiatives for CPS which were discussed at the January 9, 1990 management meeting between IP and the NRC. These actions address many of the weaknesses noted in the January 5, 1990 SALP-9 report for CPS. IP is also implementing specific actions in the areas of Engineering/Technical Support and Outages, which are described in Attachments B and C, respectively.

1. Instill an Improved Sense of Responsibility and Accomplishment

In order to improve teamwork, communication and cooperation, IP is working to instill a strong sense of responsibility and accomplishment in CPS personnel.

Focused attention is being given to the utilization of resources, communications (including recognition of good performance and perception of interest in people), and the need to make decisions at the correct level to accomplish this goal.

Specific actions being taken in these areas are as follows:

(a) A systematic review is underway to examine the effectiveness with which personnel are utilized in the various CPS departments. This review will analyze organizational structures and individual personnel functions, and will recommend improvements to better accomplish plant functions. This review is scheduled to be completed by June 30, 1990.

(b) IP is evaluating realigning shift assignments to create a team of Operations, Maintenance, Chemistry, and Radwaste personnel which continually works together as a shift as a means of improving teamwork among these personnel. This evaluation will be completed by April 30, 1990.

(c) Managers, directors, and supervisors have increased the amount of time that they spend talking with, and listening to, subordinates to assure that they fully understand work assignments and that they receive appropriate feedback from management on their performance.

(d) Appropriate input from the discussions described in item (c) above and other personnel issues are being discussed during the formal monthly management meetings attended by site managers.

(e) A fund has been established to provide incentive bonuses to individuals with outstanding performance. Bonuses have been awarded to select individuals since January 1, 1990.

(f) Managers are encouraging their subordinates to assume responsibilities and make decisions where appropriate. Training is being provided to supervisory personnel to improve their ability to make decisions.

The indicators being monitored and evaluated to determine if these corrective actions are effective in improving teamwork and communication are: attrition, evaluation of personnel error rate, personnel safety record, absenteeism, grievances, feedback from discussion with staff, and the number and nature of quality concerns received through the quality report system and the quality concern "hotline".

2. Improve at all Levels Adherence to the Policy of Procedural Compliance

To improve procedural compliance, IP is taking action to improve the clarity and accuracy of procedures, to ensure that personnel understand the need for procedural compliance, and to reduce the backlog of unincorporated procedure changes.

Specific actions being taken in these areas are as follows:

(a) CPS procedures and practices governing the preparation and review of procedures have been compared to the good practices established by the Institute of Nuclear Power Operations (INPO). Procedure 1005.01, "Preparation, Review, Approval and Implementation of and Adherence to Station Procedures and Documents", will be revised by February 28, 1990 to incorporate those practices determined to be beneficial at CPS as a result of the comparison.

(b) Operations procedures are being reviewed to ensure that they accurately reflect the Technical Specification requirements. This review is expected to be completed by April 30, 1990.

(c) The training provided to procedure writers has been reviewed for adequacy to ensure future procedure revisions are clear and accurate. The revision to Procedure 1005.01 discussed in item (a) above will incorporate the recommendations resulting from this review.

(d) A formal training seminar to ensure personnel understand the need for, and commitment to, procedural compliance has been developed. Managers will present this seminar to their departments.

(e) A Procedures group, comprised of experienced personnel from various Plant Staff departments, has been established. The group is dedicated to maintaining and revising Plant Staff procedures. This group reports to the Director - Plant Support Services. A program to reduce the backlog of comment control forms has been developed. Comment control forms will be resolved during the biennial review of each procedure. Comments indicating a need for immediate procedure changes will be handled on a priority basis without waiting for the next biennial review of the affected procedure.

(f) A survey of plant personnel has been conducted to identify procedure compliance problems. A follow-up survey will be performed in March 1990. The results of these surveys will be reviewed to determine whether changes in plant procedures or practices are required.

The indicators being monitored and evaluated to determine if the planned and implemented actions to improve adherence to procedures are effective are the trends of open comment control forms, procedure violations, and procedure inadequacies.

3. Improve Corrective Action Program Effectiveness

IP is taking actions to improve corrective action program effectiveness. These actions will: improve procedures and programs defining certain elements of the corrective action program; increase the level of management involvement in identification, evaluation, and follow-up of corrective action for conditions adverse to quality; and increase the sense of ownership and accountability for corrective action at the supervisory and working levels. In addition to being discussed at the January 9, 1990 meeting, this issue was addressed in IP letter U-601572, dated December 21, 1989.

Specific actions being taken to improve the effectiveness of the corrective action program are as follows:

(a) CPS Procedure 1016.01, "CPS Condition Reports", which provides a means for reporting conditions adverse to quality, has been revised to require: prompt and accurate identification of the precise problem; the initiation of immediate corrective actions; and the immediate notification of all departments affected by the condition identified. The revision to Procedure 1016.01 also emphasizes the need to ensure that corrective action plans (generally developed at the Supervisor and Director levels) are sufficient to preclude recurrence and that the corrective actions have been verified to have been implemented prior to closure of the corrective action document. In December 1989, managers were instructed to become more involved in assuring that corrective actions are appropriate to address identified problems. Condition reports will no longer be submitted to Quality Assurance (QA) for review and concurrence prior to implementation of the corrective action plan. The training discussed below and the increased management involvement has eliminated the need for the interim QA review. QA will continue to review quality and quality significant condition reports prior to closure to assure that the corrective actions were appropriate and complete.

(b) The Quality Assurance (QA) Corrective Action Trend Analysis Program has been restructured to incorporate the methodology contained in INPO Good Practice OE-907, "Root Cause Analysis", for the identification and evaluation of root causes and causal factors. The evaluation and presentation of root cause data will be conducted on an on-going basis. Results of the corrective action trend analysis activities will be provided in reports to CPS management personnel. The reports will enhance the ability to identify and correct potential problem areas prior to the identification of adverse trends.

(c) The Human Performance Evaluation System (HPES) developed by the Institute of Nuclear Power Operations (INPO) will be implemented at Clinton Power Station. The HPES is a program developed by INPO which provides a systematic approach to improving human reliability through the identification of root causes of human errors and the development of appropriate corrective actions. This program is scheduled to be in place by March 30, 1990.

(d) To ensure that personnel are aware of the problems identified regarding the program and the improvements being made, managers conducted departmental briefings in December 1989 to emphasize to nuclear program employees that the Corrective Action Program is their program, and that to be effective, all problems must be accurately identified and acted upon immediately. In these meetings, the managers explained the importance of the corrective action program, the proper method for using the program, current problems occurring at CPS regarding corrective action, and the efforts underway to improve the program. Subsequent to these briefings, IP determined that additional action was necessary to assure that personnel fully understand how management expects corrective action activities to be performed. Additional actions are being developed to improve personnel awareness of the program and program improvements.

(e) The Corrective Action Board (CAB) is responsible for reviewing selected significant problems to ensure proper problem identification, root cause analysis, and corrective action determination. The format of the CAB meetings was revised to provide an opportunity for the CAB members (selected CPS managers) to interact with those working level personnel responsible for the CR. Staff personnel will now attend the CAB meetings to present the details of the problem. This format provides managers with an opportunity to understand the details of the problem and to give immediate feedback to personnel on the effectiveness of their approach to identifying and resolving problems. The CAB has met six times in 1990.

(f) To ensure that conditions adverse to quality which were identified in 1989 have been adequately addressed, a special task force has been established to verify effective implementation of corrective actions for all closed Quality Significant Condition Reports, Quality Condition Reports, Notices of Violation, Licensee Event Reports, Audit Findings, and Trend Analysis Program Requests for Corrective Action during the period January 1, 1989 through December 1, 1989. The task force is evaluating these items and is identifying those for which effective corrective actions have not been implemented. When the task force determines that effective corrective actions have not been implemented either the original corrective action documents are reopened or new corrective action documents are initiated.

This task force is comprised of top-quality experienced nuclear program representatives from each CPS department. Three members of the task force are supervisory level personnel. The task force is being led by an experienced director level person. The task force reports directly to the Manager - Quality Assurance and issues weekly reports on the progress and results of its reviews to management. The task force review is expected to be completed by June 1, 1990.

(g) To further increase Clinton Power Station personnel's sense of ownership and accountability regarding the Corrective Action Program, an article about the program and planned improvements was placed in the October 30, 1989 Nuclear Program News, which is distributed to all Nuclear Program personnel and program billboards were posted at various site locations. Additionally, a discussion of program improvements and status will be included in the Monthly Performance Monitoring Management Report, which is made available to all personnel.

(h) An independent consultant has presented a training program, entitled "Root Cause Correction and Verification", to all but four departmental managers, directors, and supervisors as well as to additional personnel involved in developing, implementing, and verifying corrective actions. This training provides guidelines for determining, implementing and verifying the effectiveness of corrective actions. In July 1990, IP will begin presenting this training to other personnel involved in the corrective action process. The remaining four management personnel will receive their training at that time.

(i) Quality Assurance, with assistance from an offsite organization, will perform an audit to determine the effectiveness of the improvements in the Corrective Action Program. This audit is expected to be completed by July 2, 1990.

The indicators being monitored and evaluated to determine if these corrective actions are effective in improving the determination of root causes and the identification, implementation and verification of corrective actions are: the trends of root causes and recurring problems, and the results of QA audits of corrective action implementation.

4. Reduce Corrective Maintenance Backlog

The SALP 9 report indicated that the condition of safety equipment was generally good but that the condition of balance of plant (BOP) equipment could be improved. To improve the condition of BOP equipment IP is taking actions to reduce the backlog of corrective maintenance work requests (MWRs) for BOP equipment, to implement more effective corrective maintenance for plant material problems and to instill a greater sense of pride and ownership for material condition in personnel at all levels.

Specific actions being taken are as follows:

(a) A maintenance backlog reduction plan has been approved and will be put into place in April 1990, immediately following completion of the current CPS planned outage (PO-3). Implementation of this plan is expected to reduce the backlog of MWRs from the current level of approximately seven months worth of work to a level of approximately three and one half months by December 31, 1990. Contractor staffing in planning, engineering, radiation protection, quality assurance, and maintenance which will supplement normal CPS staffing for PO-3 will be retained to implement the backlog reduction plan. Permanent staffing levels are being evaluated to determine if changes are required to prevent a recurrence of the backlog. This evaluation is expected to be completed by February 28, 1990.

(b) The training provided to personnel on root cause and corrective action determination discussed in Section 3 item h should, among other things, effectively reduce future problems in developing effective corrective actions for long term equipment problems.

(c) IP management is committed to maintaining the material condition of the plant. Significant efforts have been made recently to upgrade the material condition of BOP equipment. Repairs effected include Motor Driven Feed Pump seal replacement, electrohydraulic control and seal oil skid refurbishment and condensate booster pump seal and leak repairs. Management's commitment to improved material condition is reflected by the plant maintenance outages performed in November and December 1989 to improve the overall material condition of the plant. Long standing deficiencies in the feedwater heater drain system were repaired in November 1989, and additional repairs were completed on leaking feedwater valves

in December 1989. Both of these outages were completed on schedule and smooth returns to power were achieved. A third planned maintenance outage began on February 21, 1990, and is scheduled to be completed on March 22, 1990.

(d) A contractor has been hired to assist in performing a review of the scope of preventive maintenance for the feedwater system. This review will employ Reliability Centered Maintenance concepts to identify functionally significant components and their failure modes, and to establish maintenance priorities. The review of the feedwater system is expected to be completed by July 30, 1990. Management will evaluate the results of this review and determine if additional reviews are warranted.

(e) An interdepartmental material control inspection team has been established. This team performs walkdowns to inspect plant material condition at least every six months. The first of these inspections, covering eight areas of the plant, was completed early in February. Material deficiencies noted were recorded and are being corrected, and future walkdowns will be conducted in a similar manner. These walkdowns provide a means for determining whether plant material condition is improving over time and whether long-term problems are being eliminated.

(f) A Maintenance Process Improvement Team was established to review the maintenance process at CPS. The team concluded that the maintenance process at CPS is relatively advanced in its concept and definition with especially strong areas in computer capability, preventive maintenance, master equipment listing, and equipment history. The team noted during their review of the maintenance process at other plants that effective programs were characterized by positive personal attitudes and a high level of cooperation. Initiatives to achieve improvements in these area are being addressed as discussed in Section 1 above. Other recommendations made by the team have been evaluated. Improvements are being made in the areas of training, documentation, and coordination in the maintenance process.

(g) To assure that plant operators are informed of actions to resolve material condition problems of concern to them, and to increase the focus on correcting these problems, the Manager-CPS, with input from the shift supervisors, has created a list of the material problems which the operators consider to be most significant. This list notes the name of the individual responsible for the resolution of each deficiency, and provides the status of action to correct the deficiency. This list will be made highly visible to personnel. The progress of the resolution of these material problems will be tracked and discussed at periodic management meetings.

(h) Previously, the assignment of priorities was established by the Modification Review Committee which was chaired by the Manager-Nuclear Station Engineering and attended by the Manager-CPS and Manager-Scheduling and Outage Management. To make modification selection more responsive to operational needs, the modification review process has been revised to require a review of proposed modifications by a subcommittee, among whose members are the Supervisor-Plant Operations and the Supervisor-Maintenance Planning. This Modification Review Subcommittee (MRS) assigns priority to the modification based on impact of the modification on the operators.

The indicators being monitored and evaluated to determine if the planned and implemented actions are effective in improving the condition of equipment are: the trends of open corrective maintenance MWRs, MWR backlog, and overdue and late preventive maintenance; the percent of work ready to work as scheduled; and material control inspection team inspection results.

Engineering/Technical Support

IP is placing particular emphasis on improving in the functional area of Engineering/Technical Support which received a Category 3 rating during the SALP 9 period. Specific areas which are being addressed to improve engineering/technical support are: the level of management involvement in the resolution of technical issues; the identification and resolution of programmatic problems; the preventive maintenance program scope; and engineering support for corrective maintenance, root cause analyses, equipment reliability, and post maintenance testing. Initiatives being taken in these areas are discussed below. In addition, IP is submitting a letter in response to the NRC's recent Operational Safety Team Inspection (OSTI) report. That letter provides additional discussion of other actions being taken to improve engineering performance.

1. Management Involvement in the Resolution of Technical Issues

As discussed in SALP-9, the Severity Level III violations in the area of environmental qualification (EQ) during the SALP-8 and 9 periods indicated that management involvement in the resolution of technical issues could be increased. IP management has extensively reviewed the EQ issues to identify problem areas and has initiated improvements to prevent recurrence of the types of problems that led to these violations. Among the major investigations initiated by IP management to identify and resolve EQ issues were:

- a QA review and follow-on engineering evaluations of more than 13,000 travellers and 3,500 maintenance-related documents to identify EQ components in 100% relative humidity (RH) environments to assure that splices and terminations had properly qualified insulators;

- reviews of EQ end-use devices required to operate in harsh environments to verify that those devices are either qualified for or protected against submergence;

- a review by Sargent & Lundy (S&L) of Class 1E equipment potentially subject to spray to verify that such equipment has been qualified for or protected against spray; and

- a review by NSED of EQ instrumentation circuits to verify the acceptability of any instances where

terminal strips are used to connect instrumentation cables in 100% RH environments.

IP management reviewed the results of these investigations to determine whether EQ issues could be handled more effectively, and identified a number of areas for improvement. IP letter U-601593, dated February 1, 1990, (attached) provides a detailed discussion of initiatives to improve EQ performance and the status of actions completed and work remaining with respect to EQ and related issues. The actions being taken in the EQ area and the other activities described in this Attachment reflect IP management involvement in engineering/technical support issues.

2. Identification and Resolution of Programmatic Problems in Engineering and Technical Support

IP management is reviewing engineering and technical support areas to assure that adequate management attention and expertise exists to successfully identify and address technical issues. In the area of EQ, extensive actions have already been taken, including:

- hiring additional personnel with EQ experience;
- contracting for experienced individuals to help IP identify areas where upgrades in IP's EQ program are needed and to assist in implementing those upgrades;
- verification of the adequacy of the EQ baseline for CPS;
- improving control of EQ changes through the Configuration Management program;
- review of EQ procedures; and
- review of programmatic and organizational interfaces related to the EQ program.

These actions are discussed in detail in IP letter U-601593, dated February 1, 1990 (attached).

To assure that technical issues are handled appropriately by other NSED programs, IP is reviewing the performance of activities in selected programs to verify their adequacy. An independent auditor is being retained to examine the in-service inspection (ISI) program at CPS. A review of the commercial-grade dedication program is also being performed to assure that the use of any commercial-grade items in safety applications has been properly justified.

The SALP report identified three specific material conditions which indicated that the identification and resolution of programmatic problems should have been more prompt: missing weep holes in electrical enclosures; unreliable Hydrogen/Oxygen analyzers; and problems with the feedwater pump regulating valves.

Each of these conditions has been resolved. As described in IP letter U-601593 (attached), IP has taken extensive action in response to the weep holes. As a result of personnel training and revised procedures, the reliability of the Hydrogen/Oxygen analyzers has been substantially increased: the number of LCOs associated with these analyzers dropped from 31 in 1988 to 14 in 1989. The feedwater pump regulating valve problems have also been addressed, as described in IP letter U-601474 dated June 30, 1989, and LER 89-022-00.

IP believes that the increased management involvement in engineering programs and the program reviews being conducted for selected engineering activities will result in the self-identification and elimination of programmatic problems.

3. Preventive Maintenance Program

The SALP report identified concerns involving the scope of the Preventive Maintenance (PM) program based upon lack of PMs for diesel generators and 345KV breakers as recommended by the equipment vendors. Actions to assure that the scope of the PM program is appropriate include:

(a) Review of the PM program for selected balance of plant (BOP) equipment. The review is currently being performed for the feedwater system and began on February 21, 1990. The review will evaluate the system from a reliability centered maintenance perspective and will identify components and failure modes which reduce overall system reliability. Following completion of the review, the existing PM tasks associated with the feedwater system will be analyzed to determine what, if any, changes (including additions or deletions) are required to address the identified failure modes. Management will evaluate the results of this review by July 15, 1990, and determine if additional actions are required. The results of the feedwater system review, and the management evaluation, will be communicated to NRC Region III. Other systems are being considered for similar review.

(b) General Electric (GE) is performing a review of the CPS High Pressure Core Spray (HPCS) and the Reactor Core Isolation Cooling (RCIC) system surveillances and PMs to ensure the systems are being operated and maintained in the manner which GE, the systems' designer, intended. This review is expected to be completed by June 15, 1990. IP will review the GE report and will revise surveillance and maintenance tasks as appropriate.

4. Engineering Support of Corrective Maintenance and Equipment Reliability

NSED is committed to improving support in the area of corrective maintenance through the establishment of the System Engineer (SE) program with emphasis placed on SE knowledge of system status and SE interaction with maintenance planners, schedulers and the maintenance organizations. NSED has established an effective means of communicating with the Shift Supervisor (at morning turnover) and the maintenance shop supervisors. Any maintenance tasks requiring NSED support are then relayed to the appropriate engineering supervisor at the daily NSED plant status briefing. SEs are becoming more proactive in notifying maintenance and operations management of their priorities in resolving maintenance backlog issues. By routinely performing walkdowns of their systems, the SEs will better be able to advise plant personnel of any unsatisfactory conditions affecting their system. The Manager-NSED and the System Engineering Director and supervisors are accompanying the SEs on walkdowns of their assigned systems to assess the thoroughness of the walkdowns and to provide guidance for identifying and resolving problems. The Manager-CPS routinely meets with the SE supervisors to exchange concerns and to assure the SEs of his commitment to their success.

Although system engineers have been encouraged to participate in surveillances on their systems, no specific guidelines for this activity have been established. IP will develop and implement guidelines for involving system engineers in the conduct of surveillances in a pilot program. These guidelines will be established by June 1990, and will include a goal for each system engineer to witness at least one appropriately selected surveillance per quarter, subject to schedule feasibility. In addition, IP will investigate practices at other operating plants to evaluate the potential benefits and practicality of involving system engineers in surveillances, and will consult with INPO to obtain recommendations on this subject. A final decision on the extent of involvement will be made in 1990.

NSED has implemented an aggressive SE training program to upgrade the knowledge of SEs on the performance of their systems. This training provides the SEs with the ability to interact with Shift Supervisors in a knowledgeable manner.

In addition to support from the SEs, the Corrective Maintenance Program is directly supported by Operations and Maintenance Support (O&MS) engineers whose primary duty is to provide immediate response to requests or assistance from the Maintenance personnel. They are located in the Service Building basement to be immediately available to the Maintenance Planners. During outages, O&MS engineers provide support during all scheduled working hours.

5. Engineering Support of Root Cause Analysis

NSED has committed to sending Directors, Supervisors and Supervising Engineers to root cause analysis training to upgrade their skills in analyzing discrepant conditions. NSED has also participated in other sitewide initiatives (as discussed in IP letter U-601572, dated December 21, 1989) which improve root cause identification. All Quality Significant Condition Reports assigned to NSED for corrective action are reviewed and signed by the Manager - NSED prior to implementation of the corrective action plan. This practice will continue until the Manager-NSED determines that NSED Directors have developed and proven their ability to identify the root cause and corrective actions for discrepant conditions.

6. Engineering Support of Post Maintenance Testing

IP is currently reviewing the method by which PMT is prescribed at CPS to determine if additional engineering support is required. Accordingly, IP will investigate how other operating plants determine the required PMT. IP will then compare the results of this investigation with the methodology used at CPS to determine what, if any, changes regarding engineering support to PMT should be implemented at CPS.

IP will also consult with the Institute of Nuclear Power Operations (INPO) to obtain their recommendations regarding how to determine required PMT. This task will complete by April 15, 1990.

IP believes that these actions will improve the overall performance in the area of Engineering/Technical Support and result in an improved rating during the SALP 10 period and beyond.

Outages

The NRC assigned a Category 3 rating to the area of outages in the January 5, 1990 Systematic Assessment of Licensee Performance report (SALP-9). The most significant outage was the first refueling outage.* Several problems were encountered during the refueling outage. The SALP-9 report noted that the corrective actions taken for each problem were adequate to prevent recurrence but that because problems with similar root causes occurred, a need to improve administrative/ management controls was indicated.

To improve administrative/management controls, three areas requiring improvements were identified: teamwork and communication among outage personnel; recognition of problems and the development of appropriate corrective actions; and the need to make decisions at appropriate levels of management.

Actions to improve recognition of problems and development of corrective action are described in Attachment A, Section 3. To improve teamwork and communication, including communication with and control of contractors, and to assure that outage decisions are made at the correct management level, IP has implemented a number of organization, communication, and training changes.

Specific actions include:

(a) A new Outage Execution Organization has been developed and defined. The organization is headed by the Outage Manager. The Outage Manager reports directly to the Manager-CPS and is responsible for the overall

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*IP believes that certain statistics concerning outage durations presented in the SALP-9 report were incorrect. In particular, on page 25 of the SALP-9 report, the CPS first refueling outage is described as having been 140 days long, with the last 58 days attributable to the correction of environmental qualification (EQ) deficiencies. As described in IP letters U-601374, dated February 14, 1989, U-601393, dated March 8, 1989, U-601420 dated April 14, 1989, and U-601510, dated August 14, 1989, the CPS first refueling outage lasted a total of 3503.7 hours, or approximately 146 days. The portion of the outage attributable to the correction of EQ issues was 815.2 hours, or approximately 34 days. Similarly, as reported in IP letter U-601531, dated September 12, 1989, the forced outage associated with repair of problems in the feedwater heating system was 168.5 hours long, or approximately 7 days, rather than the 8 days as reported in the SALP-9 report.

management of the execution of outages and for ensuring that adequate vertical and horizontal communication occurs on outage related matters. The Outage Manager for the third planned outage (PO-3) is the Manager-Scheduling and Outage Management.

(b) To improve communications, the Outage Control Center (OCC) was established. The OCC provides a central meeting area and a work area for the Outage Execution Organization. The OCC also provides a central contact area to identify and resolve outage issues which require management attention. Daily meetings are held to ensure personnel are informed of outage status, issues requiring resolution, and upcoming key events or milestones.

(c) The role of the Work Activities group during outages has been clarified. The group is responsible for control of work activities in the field, including tagout coordination, coordination of post-maintenance testing, and resolution of issues and restraints to executing the outage schedules. When issues or restraints can not be resolved, they are elevated to the OCC for resolution.

(d) Appropriate personnel will be trained on the Outage Execution Organization prior to each refueling or planned outage. An Outage Handbook will be prepared and made available to all personnel prior to each outage. The PO-3 handbook includes a description of the Outage Execution Organization, goals and objectives of the outage, key milestones, and general information about CPS.

(e) To ensure that personnel are aware of outage status and issues, a Daily Outage Report will be published. The outage report will list events completed, problems encountered, and upcoming activities.

(f) Management oversight teams for the maintenance and the refueling contractors have been established to promote better teamwork between the contractor and IP and to ensure contractor understanding of IP management philosophy.

(g) A long term contract has been made with the refueling contractor. The refueling contractor site representative arrived on-site in August 1989 to gain familiarity with operations at CPS. He has taken an active role in planning and scheduling the second refueling outage.

(h) Training will be provided to contractor personnel prior to each outage on the lessons learned from prior outages, organizational interfaces, and the division of

responsibilities for outage activities. Additionally, contractors will participate in walk-throughs and seminars prior to each outage to involve and familiarize them with complex, first-time evolutions.

(i) To improve their ability to manage contractor personnel, appropriate IP personnel have received training, provided by an industry expert, on techniques for managing contractors.

(j) Procedures governing contract and contractor management have been reviewed and are being revised to provide additional guidance in managing contracts and contractor personnel.

(k) Complex and first-time evolutions will be identified as early as possible in the outage planning process to allow time for the development of work plans and mockups. The mockups will facilitate walkthroughs and/or seminars on the evolutions. Walkthroughs and/or seminars will be used when appropriate to familiarize personnel with first time evolutions.

(l) The simulator will be utilized as necessary to refamiliarize Operations personnel with the performance of non-routine evolutions and to familiarize them with first time evolutions. This approach was used to prepare for return to power following the maintenance outages in November and December 1989, resulting in smooth returns to power.

(m) The level of detail in outage schedules is being revised to aid in the recognition and management of critical activities. Additionally, post-maintenance testing is being identified prior to the outage for incorporation into the schedule. This will aid in identifying the Operations Department resources required and assist in the timely closure of work packages. Appropriate personnel will be trained on the details of the outage schedule.

(n) The Refueling Contractor is evaluating, and upgrading as necessary, the material condition of refueling tools and hardware, to ensure that equipment is adequate to perform the refueling.

(o) Careful attention is being paid to the selection of personnel who will be involved in the management and supervision of the upcoming refueling outage to assure that these personnel have a conservative approach to safety and procedure compliance, and can compel contractors to adhere to this approach.

IP believes that these improvements have, and will, improve the performance during outages at CPS. The one week maintenance

outages in November and December 1989, were completed in accordance with their schedules. Performance during PO-3, which began February 21, 1990, will indicate the effectiveness of the changes which have been made, and are being implemented, to improve the CPS performance during outages.

Attachment to U-601509
U-601593
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1A.120

ILLINOIS POWER COMPANY

CLINTON POWER STATION, P.O. BOX 678, CLINTON, ILLINOIS 61727

JSP-0086-90
February 1, 1990

Docket No. 50-461

Mr. A. B. Davis
Regional Administrator
Region III
U.S. Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, Illinois 60137

Subject: Status of Environmental Qualification Upgrades at Clinton Power Station

Dear Mr. Davis:

In letter U-601477 to you dated June 30, 1989, Illinois Power Company (IP) identified actions taken, and planned, to upgrade the Environmental Qualification (EQ) Program at Clinton Power Station (CPS). Attachment A of this letter details the commitments made to upgrade the program and the actions taken to meet those commitments.

The committed actions have been completed and follow-up actions have been identified. Upon completion of these follow-up actions, IP is confident that the EQ program at CPS will meet or exceed the standards of the industry.

Please contact me if you have any questions regarding the information in this letter.

Sincerely yours,

J. S. Perry
Vice President

TSA/krm

Attachment

cc: NRC Clinton Licensing Project Manager
NRC Resident Inspector
Illinois Department of Nuclear Safety

Upgrades to and Reviews of the Environmental Qualification Program for Clinton Power Station

In letter U-601477, dated June 30, 1989, Illinois Power Company (IP) committed to complete eight specific actions to upgrade the Environmental Qualification (EQ) program. The details of those commitments and the actions taken to meet them are discussed below:

1. Hiring Additional Personnel with EQ Experience.

   Commitment: IP is hiring four individuals with EQ experience to improve IP's ability to implement effectively the EQ program. One of these individuals will work in the Clinton Power Station (CPS) Quality Assurance (QA) department to ensure that QA activities involving the EQ program are handled by an individual specialized in the field. Of the remaining three individuals, one has been hired to supervise activities in the EQ group within the IP Nuclear Station Engineering Department (NSED), and the other two individuals will also be assigned to work in that group. The EQ Group Supervisor, who arrived on-site on May 22, 1989, has more than 9 years of nuclear power plant EQ experience, including management of the EQ program performed by Sargent & Lundy for Commonwealth Edison Company's Byron and Braidwood Nuclear Power Stations, management of the EQ program performed by Impell Corporation for Comanche Peak Steam Electric Station and management of the EQ group of Ebasco Services Incorporated at Browns Ferry Station. The remaining three individuals are expected to be hired and arrive on-site by August 1989. The hiring of these individuals will provide IP with additional expertise and manpower in order to maintain the EQ program, assure that it is correctly implemented, and address any EQ issues that may arise.

   Action Taken: IP has completed this action by hiring one EQ experienced person in the QA Department and, in addition to the supervisor described above, three experienced personnel in the EQ group. Each of these individuals has a minimum of five years experience in the EQ area. This additional manpower has increased the supervision and the expertise in the EQ area. With the addition of these experienced personnel the Engineering Department has five personnel dedicated to the EQ area and three personnel dedicated to the seismic qualification (SQ) area.

2. Contracting for Experienced Outside Individuals with EQ Experience.

   Commitment: IP is contracting for experienced EQ individuals to assist IP in developing the upgrades and performing the reviews discussed in this attachment [Attachment A of U-601477]. These individuals will provide IP with additional expertise in identifying EQ areas which could be improved and in developing the resulting improvements. IP expects that these individuals will begin work at CPS by August 1989.

   Action Taken: As stated in the above commitment, IP contracted with outside consultants to assist in developing the upgrades and performing the reviews of the EQ program. Impell Corporation personnel expended approximately 13,000 man hours on these tasks between August 1, 1989 and January 31, 1990. During the peak of scheduled activities, Impell had

twenty-six personnel on site. The EQ program upgrades have been developed and the reviews have been completed. Although, many administrative deficiencies were identified and evaluated, none were determined to impact the operability of plant equipment. IP has retained eight EQ and three SQ consultants to assist in incorporating comments from the review into the EQ program. This action is expected to be complete by June 30, 1990.

3. Verification of the Adequacy of the EQ Baseline.

Commitment: In order to provide added assurance of the adequacy of the EQ baseline for CPS, IP has initiated a program to verify the adequacy of the EQ baseline. This program consists of the following three parts:

- Verification of the Adequacy of the EQ Zone Boundaries. Verification of the EQ zone boundaries for CPS was performed by two separate groups. First, Sargent and Lundy (S&L) Engineers reviewed each of the environmental zone boundary maps in the CPS Updated Safety Analysis Report (USAR). Second, Impell reviewed a sample of the environmental zone boundary maps in the CPS USAR, and reviewed specific procedural controls for the development and maintenance of the maps. In general, it was determined as a result of these reviews that the environmental zone boundary maps correctly reflect the plant layout and environmental areas of the plant; identified errors have been corrected.

- Verification of the Adequacy of the Master EQ List. Impell performed a horizontal and vertical review of the electrical equipment on the EQ Master List to verify its adequacy. In general, it was determined as a result of this review that the information in the Master EQ List was accurate and complete; identified errors have been or are being corrected.

- Verification of the Adequacy of the EQ Packages. IP will perform a review of a sample of EQ packages for different types of EQ equipment to verify that the testing and/or analysis relied upon to qualify the equipment bound the applicable worst-case temperature, pressure, humidity, spray, submergence, and other conditions to which the equipment might be exposed as specified in the Updated Safety Analysis Report for CPS. The sample review will also verify that the EQ packages provide documentation of the basis for the qualification of EQ equipment. This review is expected to be completed by the end of 1989.

Action Taken:

- The adequacy of the EQ zone boundaries was previously verified by two separate organizations and is considered to be complete.

- The adequacy of the Master EQ List was previously verified. An additional review was performed to reverify the adequacy of this list. This additional review is described in Item 6.

- The review to verify the adequacy of the EQ packages is complete. In order to verify the adequacy of the EQ packages the scope of this review was expanded beyond the committed "sample" review to include a review of all (100%) currently issued EQ packages, which total 106. This review was conducted by senior EQ personnel from Impell Corporation. As each binder was reviewed, the comments generated were documented and forwarded to IP for review and resolution. Any comment which had the potential to impact the operability of plant equipment was singled out for immediate resolution by IP and Impell. None were determined to impact the operability of the plant. Those comments which were administrative in nature and judged to have no potential for impact on the operability of plant equipment were prioritized and entered into an EQ Impact Summary Log for incorporation into the EQ binders by June 30, 1990.

  The EQ Impact Summary Log prioritizes and tracks all EQ outstanding open items to closure. A procedure is being developed to control the EQ Impact Summary Log. Use of this log will ensure the effective management and completion of the corrective actions for this and future reviews. The procedure governing the use of the log is expected to be issued in February 1990.

4. Control of EQ Changes Through the Configuration Management Program.

   Commitment: IP controls changes to EQ items through the Configuration Management Program. This Program includes the requirement that design changes to CPS be evaluated by NSED to determine whether the change affects the qualification of equipment, components or items which are environmentally qualified. Such effects are required to be documented and tracked for resolution to ensure that the design change results in a configuration that is qualified. These effects are also required to be resolved prior to release of the equipment for operation. IP believes that these requirements provide for adequate control of changes that could affect EQ equipment and boundaries at CPS. However, as an added level of assurance, IP will review the Configuration Management Program to ensure it adequately identifies and controls changes to configuration which could impact environmentally qualified equipment and boundaries. At a minimum, this review will include a) an assessment of the methods used to review, approve, and implement proposed configuration changes to ensure that impacts on equipment qualification are identified, evaluated, resolved, and documented prior to releasing the equipment for operation; b) an assessment of document control provisions related to EQ to ensure that necessary revisions to EQ zone boundaries, EQ packages, and the Master EQ List are implemented in a timely and controlled manner; and c) an assessment of configuration management responsibilities related to equipment qualification to ensure they are adequately defined. This review is expected to be completed by the end of 1989.

   Action Taken: This review is complete. The review concluded that the Configuration Management Program adequately controls the design change process and the impact of the design change on the EQ program. However, this review identified four areas where enhancement could be made, specifically:

- The Master Equipment List (MEL) is maintained separately from the Equipment Qualification List (MS-02.00) data base. Since the MS-02.00 reflects the EQ binder requirements and the MEL implements the requirements, the two documents can be merged to avoid inconsistencies resulting from manual translation. Strict procedural control of the MEL should then be maintained.

- EQ program interfaces can be improved by improving site awareness of the program through general training and producing a roadmap procedure identifying program responsibilities.

- The interdisciplinary review process (IDR) can be strengthened by revising design procedures to provide additional guidance on types of documents and changes requiring EQ review.

- Internal open item tracking can be enhanced by implementing the EQ Impact Summary Log and associated procedures to ensure review and tracking of items which impact the EQ binders.

Both the internal open item tracking and the training recommendations are being implemented as discussed in Action Item 3 and 8, respectively. The Manager-Nuclear Station Engineering Department will review the remaining proposed programmatic enhancements by March 1, 1990, and determine what changes will be implemented.

5. Review of EQ Procedures.

Commitment: IP will conduct a review of the engineering procedures to provide additional assurance that they satisfactorily prescribe the method for a) identifying EQ boundaries, b) identifying EQ equipment within these boundaries, c) maintaining the Master EQ List d) establishing and maintaining the qualification of EQ equipment, e) assembling EQ packages documenting the qualification of this equipment, and f) reviewing the modifications or changes for their impact on the EQ equipment and the EQ boundary. This review is expected to be completed by the end of 1989.

Action Taken: This review is complete. The EQ related engineering department procedures were found to provide adequate control of the EQ process. A need to improve the detail of the technical guidance provided for conduct of some key EQ activities was identified. For example, in order to promote consistency within the EQ program with respect to aging methods, the methodology to establish the qualified life of a component which is intermittently energized should be defined. This need to improve the detail of provided technical guidance also applies to items such as equipment similarity determinations, Failure Modes and Effects Analysis (FMEA), etc. This recommendation was accepted and revisions to improve the procedures are presently in the review and approval cycle. New procedures are expected to be issued in February 1990.

6. Review of Maintenance for EQ Equipment.

Commitment: From April 1988 to February 1989, IP performed a review of maintenance for EQ equipment. This review included a) evaluation of preventive maintenance documents to verify that they contain the proper frequency for maintenance of EQ equipment and contain technically correct provisions for performance of maintenance of EQ equipment, as specified in the Equipment Qualification Manual; b) review of a sample of Preventive Maintenance Work Requests (PMWRs) for various categories of EQ equipment to verify the adequacy of the instructions in the PMWRs; and c) review of procedures referenced in preventive maintenance task cards/ installation procedures for EQ equipment to verify the technical adequacy of the provisions in the procedures. IP took the following actions to address the findings identified by this review and to enhance the maintenance procedures for EQ equipment: a) IP established or revised preventive maintenance procedures and work documents to include specific Equipment Qualification Manual requirements that were not previously incorporated adequately in the procedures or work documents; b) IP established specific procedural requirements to ensure that preventive maintenance procedures and work documents are updated when the Equipment Qualification Manual is revised; and c) IP established a procedure requiring an NSED review of revisions to preventive maintenance procedures and work documents, and an NSED review of completed corrective and preventive maintenance work documents, related to items requiring equipment qualification, to ensure proper implementation of equipment qualification requirements. Based upon the 1988-1989 review, the enhancements made as a result of this review, and subsequent audit of the adequacy of the program by IP QA, IP believes that its maintenance procedures for EQ equipment are adequate. However, to provide additional assurance of the adequacy of these procedures, IP will re-evaluate the methodology of the 1988-1989 review and the enhancements. These efforts are expected to be completed by the end of 1989.

Action Taken: The methodology and scope of the 1988-1989 review and the enhancements made to the EQ program as a result of the 1988-1989 review were re-evaluated. The re-evaluation determined that relying on the Equipment Qualification List (MS-02.00, List 2), did not assure that the requirements and recommendations of the source document (the Equipment Qualification binder) were adequately reflected in the MS-02.00 document, and therefore in the PMWRs. This led to the conclusion that the original review was not comprehensive enough and therefore, an additional sample of PMWRs was reviewed.

The PMWR review consisted of identifying EQ-related maintenance requirements as documented in EQ packages, verifying that the requirements are correctly listed in the MS-02.00, List 2 and that the corresponding job steps are included in the preventive maintenance data base. Selected maintenance work request and preventive maintenance work request packages were also reviewed to confirm that EQ-related maintenance activities were performed in accordance with the stated requirements.

The review was conducted for nearly 1000 Equipment Identification Numbers (EINs), or roughly ten percent of all EINs currently included in the Clinton EQ program. This sample was selected to ensure that the majority of the plant's safety-related systems and equipment types were included in the preventive maintenance program.

It was concluded from the review that Clinton has a sound process for defining, communicating, and implementing EQ-related maintenance and preventive maintenance requirements. However, a number of minor errors and discrepancies were found. Typical examples of this are EINs which are listed in MS-02.00 but not in the EQ binders, and EINs which are classified more conservatively than required by NUREG-0588.

In addition to the re-evaluation and review described above, from November 1989 to January 1990, Quality Assurance (QA) performed a review of selected CPS maintenance procedures to ensure that the procedures adequately incorporated the EQ requirements of MS-02.00, List 2, and of the vendor manuals for EQ equipment. The results of the QA review were generally consistent with those described above. The QA review indicated that CPS maintenance procedures generally included the requirements of MS-02.00 List 2. However, a number of minor errors were noted. Examples of the noted discrepancies included variations in specified torque values, variations in equipment insulation resistance test acceptance criteria, and typographical errors. Problems with MS-02.00 were discussed with the EQ group and added to the EQ Impact Summary Log for incorporation into the EQ binders.

The QA review also provided recommendations for improvements in the areas of vendor manuals, maintenance procedures, the PM data base, and surveillance procedures. These recommendations will be reviewed by the Manager - NSED by March 1, 1990, to determine what additional actions are warranted.

7. Review of Programmatic and Organizational Interfaces.

Commitment: IP will conduct a review of the controls governing the interfaces between the EQ program and other CPS programs and the interfaces between the EQ group and other organizations, including Sargent & Lundy, the architect-engineer for CPS. For example, this review will verify that necessary EQ information developed or compiled by S&L in designing CPS is available to IP, that engineering procedures require that the maintenance organization be notified of changes in maintenance requirements related to EQ for incorporation into maintenance procedures, and that procedures require interdisciplinary reviews of changes that affect the EQ program, equipment, or boundaries. This review is expected to be completed by the end of 1989.

Action Taken: The review of the procedures governing the EQ program interfaces (described in item 4) is complete. The results of the review indicated that not all documentation required in the areas of design basis documentation is physically present at Clinton. This includes equipment classification justifications and applicable FMEAs. This documentation will be provided by Sargent and Lundy by June 30, 1990. Other areas of interface which require further enhancement were discussed previously under action item 4.

8. Additional Training of Personnel Involved in the EQ Program.

Commitment: IP will provide additional training to personnel involved in the EQ program, including EQ, engineering, QA and maintenance personnel. This training will reemphasize the need for maintaining strict control over, and documentation of, changes and work activities related to EQ equipment, and maintaining qualification of the equipment during the conduct of maintenance activities. This training is expected to be completed by the end of 1989, and refresher training will be performed periodically thereafter. Additionally, training will be provided on any new or revised procedures or controls resulting from the reviews discussed above. Additionally, training will be provided for appropriate engineering personnel which will include design control process, and appropriate use of design input/output documentation.

Action Taken: General EQ training was offered to all the personnel at CPS requiring EQ knowledge and familiarity with the EQ Program. To date, 385 personnel have attended this training. This training provided familiarization with the EQ program at CPS, including equipment, EQ requirements and EQ documentation. Maintenance, Engineering, and Quality Assurance personnel will receive additional training, addressing their specific activities in the EQ program, in the first half of 1990.

Actions in addition to those discussed in letter U-601477 were taken to ensure the effectiveness of the EQ upgrade activities. On October 17, 1989, IP contracted the services of an individual with EQ experience to work within the QA department. To ensure that the EQ upgrade activities are effective, the QA department, utilizing the expertise of this individual, reviewed CPS maintenance procedures, performed walkdowns of selected plant equipment, completed an overview of EQ program upgrade review results, and reviewed selected EQ packages and procedures. The results of the QA department activities indicate that the EQ program upgrade activities are providing a positive enhancement to the CPS EQ program. In addition, the QA department's awareness and expertise in EQ matters has been enhanced by interaction with the EQ contractor. On January 22, 1990, the QA department's permanent employee with EQ experience reported to work. The services of the contracted EQ experienced individual assigned to QA were terminated on February 1, 1990.

During 1990 the IP EQ group will again perform field walkdowns of selected equipment to reconfirm that the as-installed condition reflects the requirements of the updated packages. The scope of the walkdowns will be identified by February 15, 1990 and the NRC will be informed within 30 days of the completion of the second refueling outage of the results of the field walkdowns and any corrective actions required.

Illinois Power believes that by completing the above actions, the CPS EQ program upgrade project has enhanced the EQ program. Adequate measures have been taken to track and incorporate the additional enhancements and the discrepancies identified during this upgrade and review process. Enhancing procedures to provide improved guidance for maintaining qualified configuration of EQ equipment and training personnel on the EQ program provides assurance that the equipment qualification program will be maintained in the future.