

ILLINOIS POWER COMPANY



0981-L  
U-10021

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

January 17, 1983

Docket No. 50-461

Director  
Office of Inspection and Enforcement  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555

Subject: Amended Response to NRC Inspection Report 82-02

Dear Sir:

This letter provides further information in response to your Notice of Violation and Proposed Imposition of Civil Penalties dated 10-5-82 for Clinton Power Station, Investigation Report Number 50-461/82-02. Clarification contained herein is to those items discussed in the meeting of 11-18-82 attended by NRC Region III representatives, Illinois Power Company management and Sargent & Lundy personnel. The meeting was held at Clinton Power Station at the request of NRC Region III.

The responses which follow supersede those previously submitted by Illinois Power Company (ref: W.C. Gerstner letter to USNRC, U-0536, 0981-L, dated 11/3/82)

Illinois Power Company's amended response to item B.1 of the Notice of Violation is as follows:

III. CORRECTIVE ACTION TAKEN AND THE RESULTS ACHIEVED

- IEII
- A. The Notice of Violation states in part that "the requirements of Regulatory Guide 1.29.. were not incorporated in the fire protection piping installation specifications, K-2856, nor on the installation drawings...." During our investigation of this item, we determined that Illinois Power Company may have not provided the inspector adequate information to evaluate our program. The fire protection piping and supports satisfy regulatory requirements because Sargent & Lundy had determined, through analysis of typical subsystems, that non-safety related piping and supports (including fire protection systems) remain intact during Safe Shutdown

Earthquake (SSE) and during suppression pool related dynamic loading events. The fire protection piping installation contractor installs his equipment in accordance with the specification requirements and his installation layout drawings which have been reviewed/accepted by IP's Architect/Engineer (Sargent & Lundy).

Clearance requirements from low and moderate energy piping contained in the electrical installation specification K-2999, were not included in the fire protection contractor's specification K-2856. This requirement, contained in a Sargent & Lundy Standard EB-146 which was an attachment to the electrical installation specification, has been eliminated from the CPS design approach. Assurance that adequate clearance is maintained between plant components (such as between fire protection piping and safety-related electrical raceway) is accomplished via the walkdowns and analyses of the "Interaction Analysis Program." This program allows the specific clearance requirements of EB-146 to be deleted. Due to oversight, this deletion was not made in a timely manner; however, it was subsequently accomplished on June 30, 1982, in Amendment No. 6 to K-2999.

Initially, the Interaction Analysis Program was implemented under Illinois Power's Nuclear Station Engineering Department Procedure No. 26 (Rev. 0, 11/5/80) and the area (Elevation 781' of the Control Building) where the interferences were identified by the NRC Inspector were included in a field walkdown during September 3 through 11, 1981. Since the fire protection piping contractor did not start construction in this area until December 8, 1981, the interferences identified by the NRC Inspector did not exist at the time of IP's walkdown. The next interaction walkdown of this area was performed by Sargent & Lundy under their procedure PI-CP-040 (Rev. 0, 1/4/82) on March 29 and 30, 1982. Several potential interaction reports were written as a result of this walkdown, including seven (7) on fire protection piping. It is Illinois Power's belief that the "Interaction Analysis Program" provides an adequate level of confidence that potential interactions between installed components are suitably identified, analyzed, and dispositioned by the Architect/Engineer and that adequate clearances are achieved. The fire protection installation specification is considered to have incorporated the regulatory requirements of Regulatory Guide 1.29 to assure that fire protection piping remains intact during SSE and suppression pool related dynamic loads. Additionally, Quality Assurance requirements which meet the intent of

Regulatory Guide 1.120 are specified in the fire protection installation specification K-2856.

- B. The Notice of Violation states that "design interface and coordination between the architect engineer's piping and electrical design groups was not properly controlled." However, at the time of his inspection, the NRC Inspector was not made aware of information which existed in Sargent & Lundy's offices that showed such interface controls were in effect at the time the fire protection contractor's piping layout drawings were reviewed. Samples of such documentation were presented at a meeting between Illinois Power, NRC, Baldwin Associates (CPS Contractor), and Sargent & Lundy personnel on November 18, 1982.

Although IPC feels that Sargent & Lundy's vendor document review process is satisfactory, it is believed that some clarification of their practices is necessary to show that prior reviews (as represented by the samples shown at the 11/18/82 meeting) were adequately accomplished. Preliminary design interface review by Sargent & Lundy is conducted based on design drawings, not "as-built" drawings. Previous reviews of the fire protection contractor's layout drawings by Sargent & Lundy (based on design dimensions) did, in fact, note numerous interferences which were corrected on subsequent revisions. However, due to allowable tolerances for field installation of cable tray hangers, conduit, and equipment of other disciplines, such reviews may not identify all potential interference (i.e. additive tolerances may result in field interferences which cannot be readily detected in drawing reviews). In recognition of this fact, other control measures were provided to allow the fire protection piping installation contractor to report, via nonconformance reports, interferences encountered during actual installation. Also, field routing of fire protection piping is allowed, but only subject to the Architect/Engineer's final acceptance of "as-built" drawings.

In addition to the previously described "before-the-fact" programs for detecting and eliminating interferences, the "Interaction Analysis Program" (described in "A" above) provides for the identification and proper dispositioning of potential interactions "after-the-fact." IPC recognizes that certain plant areas (e.g. cable spreading room, containment, auxiliary building) are highly congested and are therefore, more susceptible to potential interactions. As a result, Sargent & Lundy has been directed to increase the frequency of interaction walkdowns in these areas from once every six (6) months to approximately once every (3) months. This increased

surveillance activity will provide additional assurance that interaction problems are not going undetected.

- C. Illinois Power has reviewed the requirements of Standard STD-EA-122, and our practices for assuring that the requirements contained therein are being met. This review found that the requirements of STD-EA-122 were unclear as to intent. Subsequently, an Engineering Change Notice (ECN 3169) was issued by the Architect/Engineer to clarify the requirements for bracing cable tray during cable pulling operations. This standard now requires that whenever pulling devices are attached to the cable trays or hangers, the trays and hangers shall be adequately braced during the cable pulling operations to provide for pulling tension reaction. Baldwin Associates Procedure BAP 3.3.2 and associated Job Instruction E-010 have been revised to reflect the current requirements for bracing the cable tray system when pulling cable. In addition, cable pulling practices at CPS now require that the cable tray into which cable is pulled must be complete and inspected prior to pulling cable into the affected tray.
- D. The Architect/Engineer has reviewed the requirements of Electrical Installation Specification K-2999, para. 903.1.e, which discusses the use of conduit between ladder rack cable tray and equipment, and determined that it is unnecessary to install conduit at these locations. The designer did not intend that conduit be installed when the tray involved is open bottom ladder rack for vertical dropouts to equipment. An Engineering Change Notice (ECN 2826) was issued to clarify this matter. With this clarifying change in place, Baldwin Associates Procedures BAP 3.3.1 and BAP 3.3.2 are now adequate for this specific item of concern.

#### IV. CORRECTIVE ACTION TAKEN TO AVOID FURTHER NONCOMPLIANCE

- A. The fire protection installation specification is considered to have incorporated the regulatory requirements of Regulatory Guide 1.29 to assure that fire protection piping remains intact during SSE and suppression pool related dynamic loads. The Interaction Analysis Program will verify that adequate clearance is achieved between fire protection piping and safety related raceway hangers. No further action is considered necessary.
- B. Sargent & Lundy have effective design interface control in existence for the concerns identified. Specific deficiencies addressed in the Notice of Violation are being systematically identified,

dispositioned, and controlled by the established Interaction Analysis Program. The frequency of interaction walkdowns for highly congested areas have been increased to avoid further noncompliance.

- C. As a result of quality concerns identified in this item and other items of the Notice of Violation, numerous Baldwin Associates electrical installation-/inspection procedures and instructions are being reviewed and revised as necessary to provide additional controls on the work and to assure that these procedures and instructions include appropriate acceptance criteria. It is believed that upon completion of this overall review and revision of electrical procedures and instructions, and upon revision of the specific procedure and instruction identified above, that further noncompliance will be avoided. Procedures included in this overall review and revision process include but are not limited to, the following:

#### BALDWIN ASSOCIATES PROCEDURES (BAP)

BAP 2.10	Equipment Installation
BAP 3.3.2	Cable Installation
BAP 3.3.3	Cable Termination
BAP 3.3.6	Electrical Raceway Support Installation
BAP 3.3.9	Cable Protection
BAP 3.3.10	Cable Tray Installation
BAP 3.3.11	Cable Tray Attachment Installation

#### BALDWIN ASSOCIATES ELECTRICAL JOB INSTRUCTIONS

E-007	Cable Terminations
E-010	Electrical Cable Installation
E-013	Cable Tray Installation Travelers
E-014	Cable Tray Attachment Travelers
E-015	Electrical Hanger Travelers

#### QUALITY CONTROL (ELECTRICAL) INSTRUCTIONS (QCI)

QCI-400	Cable Tray Installation Inspection
QCI-401	Raceway Hanger/Support Fab./Installation Inspection
QCI-403	Cable Tray Attachment Installation Inspection
QCI-404	Electrical Equipment Installation Inspection
QCI-406	Class 1E Electrical Cable Installation
QCI-408	Class 1E Cable Termination

- D. Although changes to specific procedures and instructions are not considered necessary to address the specific item of concern a general review of Contractor procedures and instructions is being performed and

revisions made to assure that procedures and instructions contain appropriate acceptance criteria and controls over the work. Contractor procedures and instructions are being reviewed against SAR requirements by IP Quality Assurance. It is believed that upon completion of the review, and upon revisions of procedures and instructions where necessary, that further noncompliance will be avoided.

V. DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED

Illinois Power is in compliance as of this date.

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Illinois Power Company's amended response to item B.2 of the Notice of Violation is as follows:

III. CORRECTIVE ACTION TAKEN AND THE RESULTS ACHIEVED

Illinois Power has performed an investigation into the five (5) areas of concern identified in the Notice of Violation. Consideration was given as to the extent to which an inspection of the hardware could be performed. It was determined that any inspection would require removal of the hardware. Illinois Power determined that hardware removal was not deemed necessary based on the results of our investigation. Investigation into each area of concern continued and the results are as follows:

- A. Investigation found that the recording of inert gas pressures was not required by the Conax Manual at the time of traveler preparation. A subsequent revision to the Conax Manual, which added the requirement for the recording of this pressure, was not picked up by Baldwin Associates Engineering. Consequently, travelers were not updated to reflect this change. A Nonconformance Report (NCR #7916) was written to document this nonconforming condition.
- B. Investigation found that a clerical error occurred during a revision to the electrical penetration travelers, which resulted in a step being left off. This step included paragraphs 6.11 through 6.16 of the Conax Manual. These paragraphs address the lifting and insertion of the assembly into the nozzle. In researching the involvement of Quality Control pertaining to the installation of the penetrations installed to date, the following is noted: Quality Control witnessed every step identified in the installation travelers for each penetration. The Conax installation instruction manual was utilized to

perform all inspections. No work (moving, uncrating, pressurizing, installation, etc.) occurred from the time each penetration was moved from the Receiving Inspection Department through the final installation sequence in the traveler without Quality Control witness.

The omission of these steps is not considered to be significant since QC verifications of work just prior to and after these steps show adequate compliance to the Conax Manual with no nonconformances identified. Additionally, general notes in the traveler direct personnel involved in the installation of the assemblies to be thoroughly knowledgeable of the Conax Manual. Illinois Power believes that the omission of the traveler step had no significant impact on the quality of the installed penetrations.

- C. Our investigation into the item included reviewing 100% of the installed Conax containment penetration assemblies. In all cases the QC inspection for torquing was performed, but for five penetration assemblies the torque wrench number and calibration due date were not documented on the QC inspection checklist JV-519. The balance of the penetration assemblies have the torque wrench number and calibration due dates recorded on the JV-519 attached to the traveler. Additionally, traveler steps were included to cover paragraphs 6.27 through 6.31 of the Conax Manual, which were designated as Quality Control "hold" points. QC signatures in appropriate steps of the traveler document the fact that the torque values of the vendor were met and the torquing of bolts was done in the sequential order specified.

Measures are being taken to verify the correct torquing of the five penetration assemblies identified by the Illinois Power investigation. Using appropriate traveler controls, QC inspectors, and calibrated torque wrenches, reinspection will be performed and documented. Completion of this inspection activity is anticipated as February 15, 1983.

- D. Illinois Power believes that the omission of the cited Conax Manual paragraphs from the electrical penetration installation traveler does not violate the requirement of Criterion V, 10CFR50, Appendix B. Illinois Power does not consider these steps to be within the scope of the penetration assembly installation traveler. The blind flange, discussed in Conax Manual paragraphs 6.33.1 through 6.33.15, is a separate assembly, and has not yet been installed. Travelers will be issued, in strict accordance with vendor requirements, for blind flange installation.

Similarly, the electrical tests defined in Section 10.0 of the Conax Manual are outside the scope of the electrical penetration installation traveler. Baldwin Associates will develop a separate test procedure, in strict accordance with the Conax Manual, to detail the testing requirements and document the adequacy of the termination points and individual conductors. The traveler forms and equipment installation procedure used for penetration assembly installation are not structured for such detailed electrical testing, data recording, and verification required for these tests. The temporary installation of gauges and fill valves was included in the travelers. When gas control boundary work in the immediate area of the electrical penetration is complete and final locations of gauges and pressure switches, as well as mounting details are designed, these instruments will be permanently installed in their final location per design under separate instrumentation installation travelers.

- E. The leak rate tests of Paragraph 7 of the Conax Manual were performed utilizing pressure gauges provided by the penetration manufacturer, and installed in accordance with the penetration manufacturer's installation manual. Investigation into this matter found that the gauges were not calibrated, which resulted in the gauge number and gauge calibration due dates not being recorded on the subject travelers. In order to correct this situation, the pressure gauges will be calibrated, at specified periods, to assure their accuracy. Additionally, the leak rate tests of paragraph 7 of the Conax Manual shall be rerun utilizing the calibrated gauges to demonstrate that the penetration manufacturer's requirements have been met. During this retest of the penetrations, ambient temperatures at the time of initial and final pressure readings will be recorded as required by the Conax Manual.

#### IV. CORRECTIVE ACTION TAKEN TO AVOID FURTHER NONCOMPLIANCE

- A. Training sessions will be given to personnel involved in traveler preparation into the requirements of Baldwin Associates Procedure BAP 2.0, "Document Control", and in BAP 2.10, "Equipment Installation", to emphasize the importance of the review of vendor documents received on site and incorporation of requirements into travelers.
- B. The clerical error that resulted in the condition cited was inadvertent and not considered indicative of program weaknesses. No further action is considered necessary.

- C. Illinois Power believes that vendor requirements for bolt torque have been met and were reflected in the travelers identified. No further action is considered necessary.
- D. Illinois Power believes that the appropriate vendor requirements were reflected in the travelers identified. No further action is considered necessary.
- E. The use of calibrated gauges to perform the leak rate test was initially considered unnecessary, as the test was performed utilizing the pressure gauges provided by the penetration manufacturer and installed in accordance with manufacturer's installation manual. The leak rate test is a pressure differential test to verify that "O" rings were installed and seated properly. This differential test is not concerned with absolute pressure readings but rather the difference between initial and final pressure readings over a pre-determined time span. The difference between the initial and final readings is the value used for acceptance determination, not absolute pressures. Illinois Power has re-evaluated this situation, and believes that the use of calibrated gauges in this situation is necessary.

In order to assure that further noncompliance is avoided, training sessions, as described in IV (A.) above will be given to personnel involved in traveler preparation and review to assure that appropriate vendor requirements are identified and incorporated in installation travelers.

V. DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED

Illinois Power is in full compliance as of this date. Testing of the Conax penetrations will proceed after lifting Stop Work Order 017.

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Illinois Power Company's amended response to item B.4 of the Notice of Violation is as follows:

III. CORRECTIVE ACTION TAKEN AND THE RESULTS ACHIEVED

A Quality Control inspection of all uninstalled cable tray sections in the laydown areas and in Seismic Category I areas of the power block was performed to determine the full extent of the problem. Nonconforming tray sections

were placed in QC "hold" areas to prevent further installation. The sections located in the power block area were subsequently touched-up with galvanox paint, and a "QC Accept" sticker was attached to allow installation. The cable tray sections in the laydown areas were marked with "Hold for QC Clearance" tags pending reinspection and will be reworked, QC inspected, and accepted for installation as the tray is required for installation. In addition, a number of sections stored in a staging area immediately adjacent to the Control Building were tagged, and condition documented on a Nonconformance Report (NCR). These tray sections have been reworked and inspected in accordance with the disposition of the NCR.

To assure that completed and in-process cable tray work conforms to requirements, there will be a reinspection/verification of installed cable trays dedicated to Class 1E cables. This reinspection will identify all cable trays which require touch-up with zinc-rich paint.

#### IV. CORRECTIVE ACTION TAKEN TO AVOID FURTHER NONCOMPLIANCE

Investigation into this area resulted in several possible root causes for this condition:

1. The purchase specification K-2980 has not always required the vendor to touch-up cable tray resistance or induction spot welds with zinc-rich paint. These requirements were added by ECN 1087 dated 4/24/79. Therefore, a significant portion of tray was received without welds being touched-up.
2. The tray presently stocked at CPS may have been received as early as 1978. Since this material is typically stored in outdoor laydown areas until used, most of the rusting of the spot welds and mars occurred after receipt inspection.
3. Receiving inspection instructions have changed several times over the period that tray has been received. Specific inspection points for the touch-up of spot welds may not have always been in effect at times tray was received.
4. It is possible, as the noncompliance indicates, that receipt inspection failed to identify spot welds not touched-up as required by the specification and required to be checked by Receiving Instructions.

At this time, nearly all cable tray sections have been received and stored in laydown areas or have been installed in the plant. It is not expected that orders for significant amounts of material will be made in the future.

Subsequently, Illinois Power has taken the position that the most efficient and thorough method to assure that cable tray is touched-up with zinc-rich paint is to:

1. Continue to require the vendor to supply tray with spot welds touched-up.
2. Continue to inspect cable tray at receipt to assure that purchased cable tray material conforms to the procurement documents for the touch-up of spot welds.
3. Perform an inspection just prior to final acceptance of installed cable tray systems dedicated to 1E cable to assure that all spot welds, damaged areas, field welds, and field cut edges are properly touched-up with a zinc-rich paint. Quality Control Instruction QCI-400 provides for the inspection of cable tray touch-up.
4. Perform a reinspection of installed cable tray systems dedicated to 1E cable to assure that all spot welds, damaged areas, field welds, and field cut edges are properly touched-up with zinc-rich paint. This reinspection will be performed in accordance with Quality Control Instruction QCI-400.
5. Cable tray will be inspected for the touch-up of spotwelds, damaged areas, field welds, and field cut edges just prior to 1E cable pulling during the electrical cable pre-pull walkdown inspection of cable tray in accordance with Quality Control Instruction QCI-406.
6. Cable tray presently in laydown areas has been re-worked and inspected to assure that all spot welds are touched-up.
7. Retraining of inspectors in receiving inspection requirements was completed December 17, 1982.

Illinois Power is confident that the above stated actions, when fully implemented, will assure that the final installed Class 1E cable tray systems meet all requirements for touch-up of spot welds and damaged galvanized surfaces.

In order to enhance the program for assuring that purchased material conform to the procurement documents, Baldwin Associates has revised the Receiving Inspection Instruction form JV-155. This revision now provides specific written instructions for receipt inspection of delivered materials and equipment for each purchase specification or purchase order as determined by those BA Quality Assurance Vendor Surveillance Engineers responsible for a particular

item/material. In addition, Baldwin Associates Procedure 2.3 has been revised to clarify the responsibilities and requirements for the receiving inspection program. Specific training has been completed on the implementation of this procedure.

A reassignment of Quality Control personnel was made in order to upgrade the quality of personnel and provide greater expertise to the QC Receiving Group. To aid in expediting solutions to receiving problems and to add additional strength to the program, arrangements are presently being finalized to provide at least one QA Vendor Surveillance Engineer in residence at the Receiving Inspection Area to interface and coordinate receiving problems and questions.

V. DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED

The reinspection of installed class 1E cable tray for the touch-up of spot welds is dependent upon, and described in an Electrical Recovery Plan in effect at CPS. Although an exact date when full compliance will be achieved cannot be given at this time, it should be noted that the implementation of this plan has been under close scrutiny by the NRC (Region III).

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With regard to item B.10 of the Notice of Violation, Illinois Power Company's amended response is as follows:

III. CORRECTIVE ACTION TAKEN AND THE RESULTS ACHIEVED

Illinois Power Quality Assurance has performed eight (8) Quality Assurance surveillances of the Baldwin Associates Deviation Report (DR) system. The first surveillance began February 25, 1982 and the December, 1982 surveillance is in progress. In addition, a Baldwin Associates Quality Assurance Audit (I-203) was performed in March, 1982, which addressed the adequacy and implementation of the Deviation Report system. BA QA surveillances have been conducted on a two (2) month schedule since. An IP Quality Assurance audit of the DR system is scheduled for February, 1983, and another BA QA Audit will be performed in the second quarter of 1983. Further surveillance and audits (1983 and beyond) of the DR system will be scheduled and performed by Illinois Power and Baldwin Associates Quality Assurance as necessary to continually monitor and assure adequacy and implementation.

#### IV. CORRECTIVE ACTION TAKEN TO AVOID FURTHER NONCOMPLIANCE

The fact that the DR system was not subject to IPC audits and surveillance prior to 1982 is due to two factors. First, the DR system was not instituted until late September 1981. Secondly, QA management decided that audit and surveillance should begin after the DR system had been sufficiently implemented to allow for a meaningful review. Such an attitude is consistent with the audit scheduling requirements of ANSI N45.2.12 (1977), Section 3.5.1, which states in part that "Auditing shall be initiated as early in the life of the activity as practicable, consistent with the schedule for accomplishing the activity...." BA was aware of the program's short comings and was endeavoring to correct these problems during the fourth quarter 1981. Consequently, it was decided that audit/surveillance would not be sufficiently effective if performed prior to January, 1982. In retrospect, earlier audit/surveillance information could have provided meaningful information.

Baldwin Associates performed audit and surveillance activities of the DR system dependent upon the stage of implementation. The DR procedure, BAP 1.0.1 was approved September 15, 1981 and implemented shortly thereafter. The first BA trend data was compiled November 30, 1981, representing the months of September and October at which time approximately 113 DR's had been written. Auditing personnel determined that it would be more meaningful to wait for a larger representative cross section sampling before proceeding with an audit. As of January 1982, 401 DR's had been written and audit preparation was begun for Audit I-203. The first surveillance, S-562, was performed on April 12, 1982 as a follow-up to Audit I-203. CAR 088 (BA Corrective Action Request) was initiated as a result of this surveillance.

It is believed that the omission of the DR system from both IP and BA QA audit and surveillance activities is an isolated case and not indicative of programmatic weakness. With this in mind, Illinois Power feels confident that actions described above, along with continued and aggressive implementation of existing programs, are adequate to assure that further noncompliance is avoided.

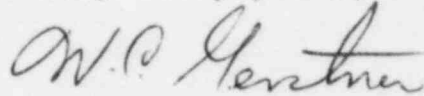
#### V. DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED

Actions taken to achieve full compliance are complete as of this date.

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I trust that our responses are satisfactory to allow closure of the items of violation. I hereby affirm that the information in this letter is correct to the best of my knowledge.

Very truly yours,



W. C. Gerstner  
Executive - Vice President

cc: J.G. Keppler (Director, Region III)  
NRC Resident Inspector  
Illinois Department of Nuclear Safety  
IP Manager - Quality Assurance