

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-461/85042(DRP)

Docket No. 50-461

License No. CPPR-137

Licensee: Illinois Power Company  
500 South 27th Street  
Decatur, IL 62525

Facility Name: Clinton Power Station

Inspection At: Clinton Site, Clinton, IL.

Inspection Conducted: July 9 through August 19, 1985

Inspectors: T. P. Gwynn

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Chief, Projects Section 1B

8/30/85  
Date

Inspection Summary

Inspection on July 9 through August 19, 1985 (Report No. 50-461/85042(DRP))

Areas Inspected: Routine safety inspection by resident inspectors and an NRC contractor of construction and preoperational testing activities including applicant action on previous inspection findings; followup on 10 CFR 50.55(e) reports; employee concerns; review of allegations; functional or program areas (including site surveillance tours, spent fuel storage racks, electrical conduits, and fuel receipt and storage); Bechtel independent design review; operating staff training; verification of as-builts; reactor vessel cold hydrostatic test results review; reactor vessel hot operations test

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witnessing; and site activities of interest (including management changes, NRC caseload forecast panel visit, and BA document review group management). The inspection involved 324 inspector-hours onsite by four resident inspectors and an NRC contractor including 28 inspector-hours onsite during off-shifts. In addition, the inspection involved 24 inspection-hours in the Regional Office by two regional based Inspectors for a total of 348 inspector-hours.

Results: Of the eleven areas inspected, no violations or deviations were identified in nine areas; two violations were identified, one in the area of allegations (paragraph 5.d) and one in the area of Bechtel independent design review construction variances (paragraph 7.a). Of the two violations identified, neither were considered to have significance to plant safety for reasons identified in this report. Two unresolved items appear in the report; the first, dealing with cable separation, may be resolved through NRR acceptance of the applicant's exceptions to the applicable standards; the second dealing with Lexan covers on Agastat GP relays has no significance to plant safety since the applicant has scheduled replacement of all such relay covers in safety related applications.

## DETAILS

### 1. Personnel Contacted

#### Illinois Power Company (IP)

K. Baker, NSED Licensing, I&E Interface  
G. Bell, Director, Construction and Procurement QA  
\*J. Brownell, Staff Specialist Licensing  
R. Campbell, Director - Quality Systems and Audits  
\*W. Connell, Manager - Quality Assurance  
J. Cook, Assistant Power Plant Manager, Operations  
\*E. Corrigan, Director - Quality Engineering and Verification  
\*H. Daniels, Project Manager  
\*J. Emmert, Supervisor, NSED, Electrical Engineering  
S. Fisher, Manager, Nuclear Support  
W. Gerstner, Executive Vice-President  
D. Glenn, Director - Safeteam  
\*J. Greene, Manager - Startup  
\*D. Hall, Vice President, Nuclear  
M. Hurshman, General Training Development Specialist  
J. Jones, Supervisor, Mechanical Maintenance  
E. Kant, Assistant Manager, NSED  
J. Loomis, Construction Manager  
M. Lyon, Senior Instructor Operations  
M. Maher, Supervisor, Electrical Maintenance  
J. Miller, Director - Startup Programs  
H. Nodine, Supervisor, Control and Instrumentation  
J. Palchak, Supervisor - Compliance & Configuration Control Department  
J. Patten, Director - Nuclear Training Department  
\*J. Perry, Manager - Nuclear Program Coordination  
\*S. Rasor, Supervisor - Construction QA  
G. Reed, Assistant Supervisor, Plant Operations  
S. Richey, Assistant Power Plant Manager - Maintenance  
\*D. Schopfer, Site Manager, Sargent & Lundy  
\*F. Spangenberg, Director - Nuclear Licensing and Configuration  
J. Sprague, NSED Licensing Specialist  
\*J. Wilson, Plant Manager  
\*H. Victor, Manager - Nuclear Station Engineering

#### Baldwin Associates (BA)

\*L. Osborne, Manager - Quality and Technical Services  
\*E. Rosol, Deputy Project Manager

\*Denotes those attending the monthly exit meeting.

The inspectors also contacted others of the construction project and operations staffs.

2. Applicant Action On Previous Inspection Findings (92701/92702)

- a. (Open) Open Item (461/85015-02): Verify that the applicant is participating in the GE surveillance program for new safety relief valves (SRVs) (NUREG-0152).

CPS Procedure No. 3831.01, Safety Relief Valve Report, details the mechanism to collect data on the actuations and leakage of the safety relief valves in the Main Steam system and generate reports required by the Institute of Nuclear Power Operations, (INPO). The procedure appears to comply with LRG Position 3-RSB and meets the SER commitments.

The procedure was an "exempt" procedure and will not be implemented until completion of scheduled review and upgrading. The procedure contained a "later" and did not yet fulfill the "commitment requirements" of CPS 1005.01, Section 8.1.2.9.12(d). The procedure was scheduled for routine review and upgrading in October, 1985.

Applicant action appeared to fulfill the SER commitment; however, this item remains open pending completion of the routine scheduled procedure review.

- b. (Closed) Open Item (461/85008-03): Bend hardness of two inch piping. (Reference allegation RIII-84-A-0196-07: Bend-Hardness was not verified prior to 1/17/85).

ASME Code Class 1, 2, and 3 pipe, type 316L austenitic stainless steel, two inch and less in diameter, bent to less than 20 diameters requires a bend hardness test. Verification of the above requirement is the responsibility of the BA Document Review Group (DRG). DRG uses the installation traveler, isometric drawings, and other data bases to perform that verification. DRG did not verify that bend hardness tests were made because of administrative and logistic problems. Completed bend hardness test results were documented on JV-939 forms and remotely filed with the purchase orders for each piping heat number. DRG marked their review check list "NA" for bend hardness.

The inspector reviewed the actions described in BA Corrective Action Requests (CAR) 229, 230, and 230-1. BA established a data base from purchase orders, receiving inspection reports, test data, and heat numbers. The information was formulated in a matrix that identified acceptable/unacceptable heat numbers, JV-939 forms (bend hardness reports), St. Louis Laboratory test reports, or approved Field Change Requests/Nonconformance Reports. 1,350 travelers were reviewed by DRG with reference to the matrix in order to verify that two inch and under type 316L piping bend hardness tests had been made. The DRG review resulted in identification of 22 document exception list (DEL) items. Corrective action had been initiated and in most cases completed for the 22 DELs.

The allegation was substantiated. Administrative and logistics problems precluded DRG from verifying the bend hardness tests; however, documentation showed that tests had been made. Actions taken by BA were appropriate. ASME Class 1, 2, and 3 pipe, type 316L austenitic stainless steel, two inch and less in diameter, bent to a radius less than 20 times its diameter had bend hardness tests performed and verified according to BA procedures.

This matter is closed.

- c. (Closed) Deviation (461/84030-02): Contrary to commitments defined in the IP Construction QA manual, nonconformance reports identified as "Type B" and dispositioned "use-as-is" were not sent to Sargent & Lundy for justification of the disposition. Type B nonconformances are those NCRs dispositioned by BA Resident Engineering in accordance with Preapproved Dispositions, are not design deviations, or are written such that they do not identify a design deviation.

In response to the Notice of Deviation, the applicant reviewed the applicable procedures which define design organization responsibilities for dispositioning nonconformance reports. Based on this review, the applicant revised portions of the Clinton Power Station (CPS) FSAR to more accurately reflect organizational responsibilities in the dispositioning of nonconformance reports. Specifically, the applicant revised the IP Construction QA manual and chapter one of the CPS-FSAR delineating the responsibility of IP for design.

The inspector reviewed the changes made to the CPS-FSAR and compared these changes to the current methods employed in the processing of nonconformance reports. In addition, the inspector reviewed the types of dispositions provided on all "Type B" nonconformances generated to date in 1985; and no deviations from the revised commitments were noted.

This item is closed.

- d. (Closed) Unresolved Item (461/84041-02): "Type A" nonconformance reports were not sent to S&L for justification of the disposition. A "Type A" nonconformance requires a disposition be provided by the same organization which established the original design requirements or one of equal design capabilities.

The applicant's response to Deviation 461/84030-02 above resolved most of the inspector's concern in this area. In addition to the actions described in paragraph c. above, the applicant conducted a review to identify all nonconformance reports for which a design review, required by ANSI N45.2.11, may have been missed by S&L. The applicant transmitted a listing of nonconformance reports requiring this review to S&L and revised the applicable IP Nuclear

Station Engineering Department Procedure (NSED D.7) to clearly delineate the requirement for a design review by S&L in accordance with ANSI N45.2.11.

Based on the applicant's review of nonconformances and revision to NSED procedure D.7, this item is closed.

- e. (Closed) Violation (461/81015-04): Nonconformance report No. 4055, which documented conditions in violation of site electrical specifications, was dispositioned "Use As Is" and closed rather than being dispositioned "rework" requiring reinspection prior to closure. Reinspection was required in order to verify the disposition was adequate.

During this inspection, the inspector reviewed nonconformance report (NCR) No. 4055. The NCR had been reopened to require reinspection and verification that the cables were enclosed in conduit. That reinspection was documented on BA quality control (QC) inspection report No. 3715, a copy of which was attached to the NCR. The NCR was subsequently closed and forwarded to the IP records vault.

The inspector further verified that the committed revision to BAP 1.0, Nonconformance Reports, concerning NCRs dispositioned "Use As Is" had been accomplished. The current revision of BAP 1.0 required QC inspection/verification of completed dispositions prior to NCR closure.

This item is closed.

- f. (Open) Open item (461/85032-01): Review of condition reports 1-85-01-085 and 1-85-01-088 revealed an identified deficiency which was similar to a previously identified 10CFR50.55(e) reportable deficiency. The deficiency involved wiring errors and drawing errors in the division III diesel generator control panel. The inspector was to review the applicant's corrective actions with regard to this item in a subsequent inspection.

During this inspection period, the inspector reviewed applicant actions with regard to these and related condition reports. The inspector determined that final dispositions had not been provided for the referenced condition reports. The applicant provided the inspector with results of a recent IPQA audit (No. Q38-85-28) and a 10CFR50.55(e) referral (85RE16). Both documents clearly indicated the applicant's awareness of the potential significance of this matter.

This item remains open.

- g. (Open) Open Item (461/85005-01): Verify piping vibration, thermal expansion, and dynamic effects testing performed during the preoperational test program.



Observation of the conduct of piping vibration, thermal expansion, and dynamic effects testing is documented in paragraph 11 below.

This item remains open.

- h. (Open) Open item (461/85005-02): Verify vibration measurement and inspection program of reactor vessel internals performed during preoperational testing program.

Observation of reactor vessel internals vibration testing is documented in paragraph 11 below. The inspector requested that the applicant notify the NRC resident office prior to performance of reactor vessel internals inspections subsequent to full flow vibration testing. That activity was scheduled to be performed during a vessel outage in August 1985.

This item remains open.

- i. (Open) Unresolved Item (461/85032-02): (Reference Allegation RIII-85-A-0116) Socket weld fitups were observed which did not appear to conform to code requirements. The applicant stated that the answers to two NRC questions would be provided to resolve this issue.

On July 27, 1985, at the request of Region III, the inspector contacted the applicant and the inspector provided the following position with regard to this item (question 2): If this configuration is not permitted by any applicable code or standard, then IP must demonstrate worst case acceptability via a detailed piping stress analysis. The applicant acknowledged this Region III position.

This matter remains unresolved.

- j. (Closed) Open item (461/85032-03): The applicant was requested to provide the resident inspector a list of all accessible structural steel beams which were excluded from the scope of the IP Overinspection Program for structural steel.

On July 25, 1985, the inspector met with cognizant IP personnel concerning exclusions of structural steel from the IP Overinspection Program. The applicant determined that the total scope of structural steel (Category I) involved approximately 1700 primary and approximately 1100 secondary members. The applicant stated that there were approximately 350 secondary structural members which <sup>were</sup> not planned to be overinspected. The criteria used in determining whether to overinspect structural members was documented by IP in letter Y-72890 dated September 11, 1984. The specific exceptions (secondary members not to be overinspected) were annotated on a set of drawings provided to the inspector.

On July 27, 1985, the inspector walked down several areas of the plant, accompanied by the applicant's structural engineers, to view typical installations of secondary members which were not intended to be overinspected. For those installations observed, the secondary members provided no obvious structural function, were supporting no safety related components, and were not in a position such that their failure could result in damage to safety related systems or components.

The inspector discussed the nature of these exclusions with the applicant's engineers and, upon request, was provided a list of additional steel structures not included in the scope of overinspection of structural steel. The inspector reviewed that list with a Region III specialist inspector and with Region III management. The list contained some items which were obviously within the scope of other overinspection categories and some other items which should have been included within the scope of overinspection of structural steel. Region III review resulted in the following position which was communicated to the applicant in a meeting held onsite on August 1, 1985, between the inspector and cognizant IP personnel:

- (1) For those beams identified as secondary with no overinspection required, IP must provide the methodology by which future modifications will be controlled such that beams not subject to overinspection will be inspected prior to performance of the modification, or justify why inspection is not required.
- (2) For the list of steel structures not subject to overinspection, perform overinspection or submit justification to Region III for termination of overinspection of that commodity.

The applicant acknowledged this position statement. This item is closed.

- k. (Open) Open Item (461/85005-19): Verify that valves in the fire protection water supply system which are not electrically supervised are key locked open with strict key control procedures and monthly verification of valve position.

The applicant provided operations standing order number 5 (OSO-005) as a comprehensive program meeting the intent of this Safety Evaluation Report (SER) confirmation item. NRC review revealed that the controls in place, while meeting the requirements of the SER, were temporary. This item remains open pending review of the controls which the applicant intends to utilize throughout the lifetime of the station.

No violations or deviations were identified.



3. Followup on 10CFR50.55(e) Reports (92700)

(Closed) 10CFR50.55(e) Item (461/85001-EE): Substitution of type AISI-1010 for ASTM A36 carbon steel all thread rod. This matter was initially reported to the NRC on February 1, 1985. On April 25, 1985, IP reported that based on their completed review of the subject, a reportable deficiency did not exist. A review of the file on this matter was made by the inspector. The architect - engineer had performed calculations which indicated that electrical conduit installation details were currently acceptable with the lower yield and tensile strength material. Baldwin Associates confirmed that all electrical box enclosure installations already met revised dimension requirements. (Reference: SLS-14960). All other required corrective actions have been completed, none of which if left uncorrected would have had significant impact on safety.

This matter is closed.

No violations or deviations were identified.

4. Employee Concerns (99014)

The resident inspectors reviewed concerns expressed by site personnel from time to time throughout the inspection period. Those concerns pertaining to regulated activities were documented by the inspectors and submitted to Region III. Two concerns were transmitted to the regional office during this report period. The concerns will be reviewed and dispositioned according to NRC procedures.

No violations or deviations were identified.

5. Review Of Allegations (99014/51063/52063)

- a. (Closed) Allegation (RIII-85-A-0118) (#148): The Clinton NRC Resident Office was contacted by certain individuals who felt that BA Field Verification QC inspectors were being intimidated by production goals and may have to sacrifice quality in order to retain their jobs. It was further alleged that some inspectors may have performed an impossibly high number of inspections. The area in question was electrical raceway and attachments.

NRC Review and Results

After numerous personnel interviews and review of inspection documentation the inspector determined that:

- (1) This allegation originated from a QC group meeting on June 20, 1985. Management's statements were intended to increase worker output by identifying QC inspectors who were not accomplishing reasonable

amounts of work during specified time frames. Some of the attendees perceived the statements as requiring a sacrifice in quality in order to maximize inspection output. The subject meeting created a large communication gap. The NRC inspector found that as a result of the meeting, the participants reacted negatively and either took the same amount of time to inspect or took more time in order to insure they were correct. All QC personnel interviewed stated they were never intimidated or had sacrificed quality to any real or perceived goals of inspection output. The inspector notes that higher management has since held more meetings and stated that there are no production goals for which anyone will be fired, and that their intent has always been for each person to perform at his maximum level without sacrificing quality. There was no indication that any QC inspector had sacrificed quality in any matter.

- (2) The inspector reviewed records that indicated how many inspections were performed by each inspector on each day from January 1, 1985 through July 19, 1985. This information also recorded what types of items (cable tray hanger, conduit, conduit hanger, etc.) were inspected. The tabulated results of this review show that, for the period covered, an average of 1.81 inspections per inspector per day were performed. The highest number of inspections performed by the entire group on any one day was 41, which was accomplished by 11 inspectors, for an average of 3.7 inspections per inspector for that day (June 28, 1985). The review failed to reveal any instance of "12-15" or "up to 20" inspections being performed by any one individual on any one day as was alleged.

The records review showed that 6 to 10 inspections per day could have been performed by certain individuals on specific days. A number of these instances were selected by the inspector. The actual installations were reviewed in the field by the inspector to determine whether such a quantity could have been thoroughly and adequately inspected by one person in one day. In all cases it was determined by the inspector that one qualified Level II inspector could easily have performed the indicated quantity of inspections in any one day. There was no indication that any Field Verification inspector had performed an inordinately high number of inspections that would suggest "pencil inspection" only.

Based on results of the review, this allegation is closed.

- b. (Closed) Allegation (RIII-85-A-0110)(#149): A concerned individual alleged that BA NCR 32639 was improperly dispositioned, leaving the adequacy of cable installations under the reactor pressure vessel in an indeterminate condition. The individual was

particularly concerned that the NCR disposition addressed matters other than the matter of cable separation for cables in air, and the matter of the cables in question not being installed in conduit.

#### NRC Review

The installation in question is where cables terminate to the control rod drive mechanisms in the area directly beneath the reactor pressure vessel. The cables were supplied power from redundant safety related divisions. The cables were used to supply both neutron monitoring and control rod position information to the control room. The inspector observed the as-installed configuration of the cables in question, reviewed the disposition of NCR 32639, and compared the installed condition and NCR disposition to licensing commitments contained in the Clinton Power Station (CPS) Final Safety Analysis Report (FSAR).

The inspector contacted the Senior Resident Inspectors at Riverbend and Perry and determined that the installation at CPS was similar in terms of conduit installation details in the under vessel area. The inspector noted that the cables in question were low voltage, low current signal cables.

#### Results

The inspector determined that the disposition of NCR 32639, and therefore the actual installation, was not consistent with FSAR commitments to Regulatory Guide 1.75 and Institute of Electrical and Electronic Engineers (IEEE) Standard 384-1974. This substantiated the alleged condition.

This matter was discussed in detail with the applicant who, after consultation with the designer (General Electric), stated that the as installed condition remained acceptable as is. The applicant provided a proposed change to the CPS FSAR which, if accepted by the NRC Office of Nuclear Reactor Regulation (NRR), would resolve the apparent conflict. The applicant indicated that this proposed amendment would be submitted to NRR in an FSAR amendment scheduled for October 1985. The NRR Licensing Project Manager was advised of this matter by the inspector. The NRR license reviewer informed the inspector that NRR will determine the acceptability of this installation. No further action was deemed necessary by the inspector considering the minor nature of this technical deficiency.

This matter is closed.

- c. (Closed) Allegation (RIII-85-A-0094) (#144): An individual contacted the NRC and the CPS Safeteam and alleged the following:

- (1) The source of power to 4160 volt safety related switchgear, 480 volt unit substations, and 480 volt motor control centers was not engraved on the switchgear and was not on the right place on the drawings depicting the switchgear and motor control centers. Due to this condition, the individual alleged that it was not possible to identify the main power supply and the location of its incoming feed. The individual further stated that the CPS Safeteam investigation of this matter had either revised or misinterpreted his statements leading to inadequate resolution of his concerns.
- (2) Electrical separation requirements contained in IEEE 384-1974 and Regulatory Guide 1.75 had not been incorporated into the procedures being used to verify electrical separation at the Clinton Site.

#### NRC Review

The following information is applicable to item 1 above:

In order to assure that the alleged's concern was properly understood, the inspector listened to a tape recording of the alleged's Safeteam interview. After listening to the tape recording, the inspector performed a detailed review of the Safeteam investigation results (concern 11960-C). That review revealed that the Safeteam investigation did accurately understand the alleged's expressed concern.

The inspector then compared the existing identification on safety related motor control centers and switchgear (4160 VAC switchgear 1A1, 480 VAC unit substation 1A, and 480 VAC motor control centers 1A1 and 1A2) with identification requirements stated in the CPS FSAR and IEEE Standard 308 as depicted on construction drawings. The comparison showed that the existing identification and tagging of the safety related motor control centers and switchgear was in compliance with applicable requirements. The inspector noted that actual location on drawings and physically engraving the source of power on each item were not requirements for these installations.

The inspector noted that all safety related motor control centers and unit substations exhibiting a yellow nameplate were fed from switchgear 1A1 which also has a yellow nameplate. Similarly, those motor control centers and unit substations with blue nameplates were fed from switchgear 1B1 (blue) and those with green nameplates were fed from switchgear 1C1 (green). Plant operators and maintenance technicians have been trained in and were knowledgeable of these color conventions. In addition, the inspector noted that, for every piece of 4160 VAC switchgear observed, the cubicles containing the incoming feeds were tagged with the source of the incoming feed.

The following information is applicable to item 2 above:

This concern was identified by the NRC's Construction Appraisal Team inspection at CPS and was documented in inspection report 50-461/85030. Additional information relevant to this matter is documented in paragraph 7a. of this report.

#### Results

With regard to item 1 above, this allegation was not substantiated. The existing tagging on safety related power distribution equipment was determined to be in conformance with applicable requirements delineated in the FSAR and depicted on drawings. The Safeteam investigation of this matter was found to be consistent with NRC findings.

With regard to item 2 above, this allegation was substantiated and corrective measures were being developed by the applicant as a result of NRC CAT team findings. This matter will be tracked by Region III under the CAT team finding.

This matter is closed.

- d. (Closed) Allegation (RIII-35-A-0055-2) (#128): BAP 1.5, Material Identification, conflicts with the installation procedures for electrical raceway and conduit installations. After January 1, 1984, heat (HT) number, receipt inspection report (RIR) number, and QC accept stamp were required to be on the material whenever material was cut. The use of the QC accept stamp was alleged to have been deleted from certain procedures.

#### NRC Review

As documented in inspection report 50-461/85015, paragraph 4.b., subsequent contact with the allegor clarified this allegation. NRC review of the applicable procedures indicated that some ambiguity existed which could be misinterpreted. The inspector discussed this matter in detail with cognizant IP personnel. The applicant's representative agreed that the procedures for inspection of electrical conduit and cable tray supports (BAP 3.3.1, 3.3.6, and 3.3.14) did not provide specific direction to the QC inspector concerning recording the presence of a QC accept stamp. This procedural unclarity could have resulted in NCRs not being initiated for materials which were installed after January 1, 1984, and which did not reflect a QC accept stamp.

Additional review by the applicant revealed inconsistencies between the requirements of BAP 1.5 and the disposition of certain nonconformance reports. These inconsistencies may have contributed to the misinterpretation of procedural requirements by QC supervision.



## Results

This allegation was substantiated. The requirements of BAP 1.5 to place a QC inspector's stamp on cut materials was not being properly implemented. This is in violation of 10CFR50, Appendix V, which requires in part that activities affecting quality be prescribed by documented procedures of a type appropriate to the circumstances, and be accomplished in accordance with those procedures (461/85042-01).

The failure of Baldwin Associates to provide adequate procedures to implement the requirements of their quality assurance manual and BAP 1.5 was documented in BA Corrective Action Request (CAR) No. 249 dated June 7, 1985. That CAR provided corrective action commitments which, when fully implemented, should be sufficient to resolve the above identified violation

The applicant stated that the absence of a QC accept stamp on the material was not indicative of a hardware problem because of testing conducted on electrical installations (see inspection report 50-461/85015, paragraph 2.f.) and because all affected materials available onsite were procured as safety related. Since the grade of material required for electrical support installations (plates and shapes) was A-36, the worst case loss of material traceability would result in a higher grade of material being installed in A-36 applications. This situation had been previously evaluated and accepted by the architect engineer.

This matter is closed.

One violation was identified.

## 6. Functional or Program Areas Inspected

### a. Site Surveillance Tours (42051C/71302)

At periodic intervals during the report period, surveillance tours of areas of the site were performed. Those surveillances were intended to assess: cleanliness of the site; storage and maintenance conditions of equipment and material being used in site construction; potential for fire or other hazards which might have a deleterious effect on personnel or equipment; and to witness construction, maintenance, and preoperational testing activities in progress.

In general, the storage and maintenance of safety-related material and equipment was acceptable throughout the laydown areas and the power block. However, several instances of inadequate storage conditions were reported to IPQA. Of particular concern was the area



of cable tray cleanliness where three instances of excessive debris were identified. In each case IPQA initiated a NCR for corrective action. It was noted by the inspector that the issue of cable tray cleanliness was previously brought to the applicants attention in Inspection Report 50-461/84043. In addition to tray cleanliness, the High Pressure Core Spray power supply cable (cable LHP08A) was found by the inspector to have some damage to the cable jacket. This condition was reported to IPQA and NCR 34346 was initiated. The subject of damage to cable LHP08A is an open item pending an NRC review of the applicable NCR disposition (Open Item 461/85042-02).

No violations or deviations were identified.

b. Spent Fuel Storage Racks (92704)

As a followup to the review commenced during the last inspection period (reference Inspection Report 50-461/85032, paragraph 8.c.), the inspector completed the review of QA measures taken to assure correct BORAL installation in the high density spent fuel storage racks at Clinton Power Station. BORAL is a neutron absorbing material used to allow high density fuel storage.

The inspector reviewed QA documentation provided by the BORAL fabricator, Brooks & Perkins (B&P), to the spent fuel racks fabricator, Nuclear Energy Services (NES). The documentation reviewed included the B&P Certificate of Compliance, Areal Density Certification, B<sub>4</sub>C Powder Certification, and B<sub>4</sub>C Particle Size Certification. This certification was provided for each of the four shipments of BORAL plates from B&P to NES. Review of the documentation indicated compliance with NES design specification No. 80A3953. In particular, the inspector reviewed the Areal Density Certification which documented compliance with the design specification of greater than .030 gms/cm<sup>2</sup> of Boron 10 areal density.

No violations or deviations were identified.

c. Electrical Conduits (51063C)

During this report period, the inspector observed the as-built installation of safety related electrical conduits C81711(K1E), 681713(K1E), C81124(K2E), C81134(K1E), C81163(C2E), 66636(C2E), C62781(K1E) and C62756(K1E). For each of the conduits observed one or more of the following attributes was noted: technically adequate and approved drawings; material type and size; configuration, dimensions and tolerances; location; anchorage.

No violations or deviations were identified.

d. Fuel Receipt And Storage (60501)

During this report period, the inspector observed the training of plant staff in preparation for initial fuel receipt. The applicant conducted a "dry run" which included transport of a dummy fuel bundle via truck into the fuel building; removal of the fuel container from the truck and placing the container in the fuel building; removal of the fuel bundle from the shipping container; and placement of the bundle in the fuel inspection stand.

Participants in the "dry run" included Radiation Protection (RP), Quality Assurance (QA), Plant Maintenance and Engineering. The dry run was critiqued by IP management.

No violations or deviations were identified.

7. Bechtel Independent Design Review (IDR) Construction Variances (92705)

The inspector performed a sampling inspection of construction variances identified by Bechtel Power Corporation (BPC) during conduct of the IDR. This inspection was intended to verify that all identified deficiencies had been dispositioned by the applicant, that corrective action had been or was being taken, and to assess the adequacy of action taken by the applicant in resolving the identified deficiencies.

Bechtel documented twenty six (26) construction variances in letter BLI-80 dated January 3, 1985, from BPC to IP. The inspector reviewed IP QA surveillance report CY-26668 dated March 19 through April 10, 1985, documenting IP verification of actions taken on all BPC identified construction variances. The inspector then selected 13 of those items for further review, as follows:

<u>Variance Number</u>	<u>Bechtel Description of Variance</u>
6	For cable tray support No. E30-1001-01A/H13, the stiffener plate for vertical member is 4 in. north of the vertical member. Dwg. E30-1001-01A-CPH, Rev. M and CPT, Rev. AR calls for a tolerance of $\pm 1/2$ in.
7	For cable tray support No. E30-1001-01A/H7, the south vertical member is not welded to support structure. The support is presently on hold due to interference with a pipe support.
8	For cable tray support No. E30-1000-02A/H16, the top member with dimension A has not been installed because of interference with tray 103-OD-F-28.

<u>Variance Number</u>	<u>Bechtel Description of Variance</u>
9	For cable tray support No. E30-1005-04A/HSS, the auxiliary steel stiffeners connection of the north vertical member of the auxiliary steel are not in place.
10	Three anchor bolts for the HPCS [high pressure core spray] diesel generator 1DG01KB have only one nut. Drawing calls for double hex nuts. See M04-001, Sh. 3, Rev. 4.
11	For diesel generator 1DG01KB, one bolt is missing on the connection of 16 cyl/12 cyl to skid.
20	Separation identification discrepancies were found in GE main control boards.
21	Cracked relay casing was found on Agastat relays.
22	Class 1E and non-Class 1E flexible conduits above SSW [Shutdown Service Water] HVAC panel 1PL53A were within 1 in. (typical for 1PL53B&C).
23	Unused Class 1E cable was coiled on floor in screenhouse in an unsecured area.
24	As-built discrepancies were found in internal wiring for panel 1E22-S001B.
25	Conduit separation within 1 in. was found as follows: <ul style="list-style-type: none"> <li>a. Conduits C72773 (Div. 3) &amp; C71615 (Div. 2)</li> <li>b. Conduit C72013 (Div. 2) &amp; unmarked non-Class 1E conduit.</li> <li>c. Conduit C71359 (Div. 2) &amp; unmarked non-Class 1E conduit.</li> <li>d. Conduit C71360 &amp; unmarked conduit.</li> <li>e. Conduit C71359 (Div. 2), unmarked Div. 2 conduit, &amp; unmarked non-Class 1E conduit.</li> </ul>
26	<ul style="list-style-type: none"> <li>o Pullbox 1PB6193K improperly tagged Class 1E, division 2</li> <li>o Conduit C2728 entering Pullbox 1PB275 improperly tagged as Non 1E.</li> </ul>

Review and field observation (when applicable) of all items listed above determined that the actions taken by the applicant to address IDR construction variances were appropriate and adequate except as discussed below:

a. Control of Electrical Separation Potential Interaction Reports (PIRs)

Review of PIRs associated with items 22 and 25, above, revealed that PIRs documenting violations of electrical separation criteria had been dispositioned "use as is" and closed based on structural calculations. Subsequently, those PIRs had been analyzed by S&L electrical engineers and found to be acceptable. The following table provides a summary of PIRs reviewed, their status at the time of NRC review, and a listing of deficiencies noted:

<u>PIR</u>	<u>PIR Status</u>	<u>Deficiencies Noted</u>
C-051	Closed February 27, 1985	Electrical analysis performed July 13, 1985
C-425	Closed March 14, 1985	Electrical analysis performed July 13, 1985
C-431	Closed February 27, 1985	Electrical analysis performed May 25, 1985
C-537	Closed February 27, 1985	Partial electrical analysis performed on June 8, 1985; final analysis pending completion of testing at Wyle Labs.
C-561	Closed February 27, 1985	Electrical analysis performed April 26, 1985
C-1666	Closed February 27, 1985	Electrical analysis performed May 24, 1985
L-56	Closed February 27, 1985	Electrical analysis performed May 24, 1985
L-57	Open	<ol style="list-style-type: none"> <li>PIR documented 7 violations; only two were dispositioned by redesign. The other 5 were not addressed in the disposition.</li> <li>Partial electrical analysis performed on August 5, 1985.</li> </ol>

L-63      Open

3. Electrical analysis pending completion of testing at Wyle Labs.
1. PIR documented 11 violations; only two were dispositioned by redesign. The other 9 were not addressed in the disposition.
2. Partial electrical analysis performed on May 8, 1985.
3. Electrical analysis pending completion of testing at Wyle Labs.

The inspector noted that the electrical analyses referred to above were neither annotated on the PIR (as were the structural calculations used to disposition the PIR) nor attached to the PIR. The electrical calculations were not available onsite but were provided by S&L's home office.

Sargent & Lundy procedure PI-CP-034, revision 4, Interaction Analysis, provides the criteria and controls for performance of seismic and electrical separation walkdowns. The procedure had been revised on June 13, 1985, to correct electrical separation criteria as a result of NRC Construction Appraisal Team inspection observations. Review of this procedure, with reference to the items tabularized above, revealed the following procedural violations or deficiencies:

- (1) Paragraph 4.3.1 stated that S&L EPED would review PIRs concerning electrical separation. The PIR form did not provide a block to indicate assignment of electrical separation PIRs to EPED.
- (2) Paragraph 4.6.1 stated that PIRs dispositioned "use as is" would be closed out based on the supporting documentation. Electrical separation PIRs dispositioned "use as is" were closed out without reference to the applicable calculations and sometimes before the calculations were performed or completed.
- (3) Paragraph 4.4 provided for disposition of PIRs by detailed displacement calculation (paragraph 4.4.1), by impact analysis (paragraph 4.4.2), or by redesign (paragraph 4.4.3). The procedure did not provide for disposition by electrical analysis.



- (4) The procedure apparently did not address the use of a PIR to document multiple interactions requiring differing dispositions.

These procedural violations/deficiencies were discussed with the applicant who provided information indicating that controls were in place, albeit not proceduralized, which provided sufficient control to assure that electrical separation criteria violations would be properly dispositioned prior to final closure of the PIR. The inspectors acknowledged the controls; however, the above represent examples of violations of 10CFR50, Appendix B, Criterion V, which requires in part that activities affecting quality be prescribed by documented procedures, of a type appropriate to the circumstances, and be accomplished in accordance with those procedures (461/85042-03).

In addition to the above, review of procedure PI-CP-034 revealed that the separation criteria being used were not commensurate with the requirements of Regulatory Guide 1.75 and IEEE 384-1974, as follows:

- (1) Paragraphs 4.2.4.1.w.3, 4.2.4.1.w.2, and figure 25 did not address open bottom (i.e., ladder) trays above safety related open top trays.
- (2) Paragraph 4.2.4.1.w.6 applied the IEEE 384-1974 6 inch separation requirement for cables in air (which the standard allows only inside panels and which the CPS FSAR allows at raceway to PGCC termination cabinets) to general plant areas. The normal interpretation of that standard applies separation distances for cables in tray to cables in air in general plant areas.

These apparent deficiencies existed after the procedure had been changed in response to NRC CAT inspection findings. These matters were discussed with the applicant who stated that recent changes to the CPS FSAR allow these exceptions to the IEEE standard requirements. Those changes were pending completion of testing at Wyle Test Labs and were pending approval for use by NRR. This matter is unresolved pending NRR acceptance of the applicant's FSAR change (461/85042-04).

b. Agastat GP Relay Cover Cracking

Review of applicant documentation associated with IDR construction variance number 21 revealed that the applicant had previously identified and reviewed the matter of cracked Agastat GP relay covers for reportability under the provisions of 10CFR21 (21-83-10). The review resulted in replacement of all relay covers made of "Lexan".



In addition, IP found the matter to be not reportable based on evaluation of their results. Review of the evaluation revealed that the applicant had not considered possible failure of the relay cover, even though their evaluation specifically stated that the relay manufacturer could not provide assurance that the cracked or crazed covers would not worsen over time. In addition, the inspector observed that earlier problems with General Electric HFA Relays were the subject of IE Bulletin 84-02. That bulletin was related to the cracking of Lexan parts within the relays. The IE Bulletin required licensees to review their facility to determine, among other things, if Lexan was used in other safety related applications. The IP response to IE Bulletin 84-02 did not identify the earlier problem with Lexan relay covers. Discussion with the applicant indicated that they will provide additional information in response to IE Bulletin 84-02. These matters were referred to Region III for review to determine what, if any, additional inspection activity is required. This is an unresolved item (461/85042-05).

The inspector concluded, based on a 50% sample and based upon review of the applicant's QA surveillance report, that IDR construction variance had been properly dispositioned and actions taken to resolve the variance, both individually and, where appropriate, generically. The deficiencies identified during the course of this inspection did not appear to adversely impact the hardware involved.

8. Operating Staff Training (41301)

During this inspection period, the resident inspectors attended the applicant's General Employee Training and Radiation Worker Training Courses. These courses were some of the prerequisites for any worker to be allowed access to radiation controlled areas in the plant. The inspectors reviewed the course materials, course presentation, and administration of these two courses and evaluated the courses based on the inspector's prior experience and training. No significant deficiencies were identified; several general observations were provided to the IP Director - Nuclear Training Department.

No violations or deviations were identified.

9. Verification of As Builts (37051)

The inspector performed an inspection of electrical raceway and supports to verify that the as built configuration was properly reflected on applicable design drawings and in related plant records, and that deviations from the original design had been reviewed and approved.

This inspection included a review of each item for the following attributes: location/routing; supports; separation/isolation; physical loading; and identification.

The following items, selected by the inspector from various locations in the plant, were subject to a detailed inspection using applicable design drawings during field walkdown.

<u>Conduit</u>	<u>Cable Tray</u>
C8225(P3E)	10701(P3E)
C0793(P3E)	10701E(C3E)
C6908(P2E)	10700D(P3E)
C664(P2E)	10700E(C3E)
C628(P2E)	16390D(P3E)
	16395(P3E)
	16396D(P3E)
	16397D(P3E)
<u>Conduit Support</u>	<u>Tray Support</u>
E28-1000-03A-WV-F-8	E30-1003-04A-H8
E28-1000-03A-WV-F-5	E30-1003-04A-H7
E28-1000-03A-WV-F-4	E30-1003-04A-H6*+
E30-1003-04A-CC-F-4	E30-1003-04A-H3
E30-1003-04A-CC-F-5	E30-1003-04A-H2
E26-1000-01A-WAI-6	E26-1003-05A-H1
E26-1000-01A-WAI-7	E26-1003-05A-H2
E26-1000-01A-WH-27	E26-1003-05A-H3
E26-1000-01A-CC-41*	E26-1003-05A-H4*
E26-1000-01A-CC-20A*	E26-1003-05A-H5
E26-1000-01A-CC-20B*	E26-1003-05A-H6*
E26-1003-01A-CP-4A	E26-1003-05A-H7*
E26-1003-01A-CC-9A*	E26-1003-05A-H8*
	E26-1003-05A-H9
	E26-1003-05A-H10

Items marked with an asterisk had been inspected by the applicant's contractor under the BA Field Verification Program. The item marked with a plus had been inspected by IP under the Overinspection Program. All cable tray and tray supports had been reinspected by BA under the 100% Cable Tray Reinspection Program.

### Results

All items inspected were found to be constructed in accordance with the design drawings and applicable design change documents, except as follows:

- a. The flexible section of conduit at the motor end of conduit C8225 was found to be 4' 4" long. Design drawings required a minimum length of 5' for this 5" diameter flexible conduit. The applicant acknowledged this discrepancy.

- b. The south diagonal brace member for tray support E30-1003-04A-H2 was found to be partially disassembled. This was an isolated case and appeared to be a result of construction activity in the area after QC inspection and acceptance.
- c. Two of four 3/4" diameter A325 bolts in tray support E26-1003-05A-H4, as required by EHD drawing details 1 & 2, were missing. The applicant provided NCR 92084, the disposition of which stated that only two bolts were required to provide structural adequacy; however, there were no calculations provided to support the disposition. The inspector was provided the results of preliminary calculations performed at the inspector's request. Those calculations showed that the disposition was justifiable.

The discrepancies documented above were considered to be minor. Overall, based on this review, cable tray, tray supports, conduit, and conduit supports appeared to have been properly constructed and the as-built condition accurately reflected on the applicable design documents. There was no perceptible difference in the quality of installations that had been subject to the Overinspection Program including field verification and Overinspection.

No violations or deviations were identified.

#### 10. Reactor Vessel Cold Hydrostatic Test Results Review (70562)

The inspector reviewed test results provided by the applicant for XTP-CH-01, Reactor Pressure Vessel Cold Hydrostatic Test. This review was intended to ensure that: the test results were being adequately evaluated by the applicant; the test data met acceptance criteria and deviations were properly identified and resolved; review procedures were being followed; and to evaluate the adequacy of the applicant's administrative practices with respect to test execution and data evaluation.

##### Results

Based on the inspector's witnessing of the reactor vessel hydrostatic test (reference inspection report 50-461/85010) and review of the hydrostatic test results package the following was determined:

- a. Test Change Notices (TCN) were approved and incorporated into the test procedure in accordance with the licensee's administrative procedures.
- b. TCN's affecting the procedure were identified on the procedure and did not change the objective of the test.
- c. Test deficiencies identified were resolved, documented, reviewed, and accepted by management.

- d. Test results have been evaluated and documented indicating that the test met design requirements.
- e. Quality assurance personnel established hold points on the test procedure and witnessed the performance of the test.
- f. The test package has been reviewed and accepted by quality assurance personnel and documented.

No violations or deviations were identified.

11. Reactor Vessel Hot Operations Test Witnessing (70370/70431/92719)

The inspector observed applicant actions in preparation for and during performance of Reactor Vessel Hot Operations. This inspection activity began as followup inspection on two previously identified items (see paragraph 2 above), and as followup on applicant commitments contained in their response to inspection report 50-461/81014.

The test included heatup of the reactor vessel and connecting piping to approximately 500 degrees F; preoperational testing of the reactor recirculation system; piping vibration, thermal growth, and system expansion testing; reactor vessel internals vibration testing; and drywell ventilation system testing. Heatup of the reactor vessel began on July 9, 1985, with the total test scheduled to extend over a six week period. Actual test completion was achieved on July 29, 1985, about two weeks ahead of schedule.

This inspection was intended to verify that the applicant was conducting specific preoperational test activities in accordance with approved test procedures; to evaluate the performance of startup test personnel conducting the test; and to independently verify the acceptability of selected test results. In addition, the inspector verified applicant commitments in response to inspection report 50-461/81014.

The following portions of selected preoperational and special test procedures were witnessed during this inspection:

- a. XTP-HO-01, Hot Operations: Establishing reactor vessel level control
- b. XTP-EX-01, Piping Thermal Expansion Test (Hot Operations): Plateau number 3 ( $500 \pm 50$  F) walkdown of pipe supports, snubbers, restraints, and main steam line guide assemblies (paragraph 7.4.3); and penetration assembly movement below  $120^{\circ}$  F (paragraph 7.6.4).
- c. PTP-RR-02, Reactor Recirculation System Pump, Motor, and Logic System Test: Single pump trip (pump A) (paragraph 7.9).

- d. XTP-VI-03, Reactor Recirculation Piping Steady State and Transient Vibration Testing: Pump trip vibration (pump A) (paragraph 7.11).
- e. PTP-RV-01, Reactor Vessel Flow Induced Vibration Preoperational Test: Verified single pump operating hours for pump A by control room operator log (paragraph 7.2); requested notification prior to performance of post flow reactor vessel inspection (paragraph 7.3). This activity was scheduled to be performed on August 18, 1985.

For each test witnessed, the inspectors verified that: the latest revision of the approved test procedure was available and in use; minimum crew requirements were met; a sample of test prerequisites was met; a sample of required plant systems was in service; test equipment was calibrated; and the test procedure was adhered to during conduct of the test. Data collection and preliminary data analysis during test performance were observed to be adequate. Overall coordination and actions by the test crew appeared adequate and timely.

In addition, the inspectors closely monitored the day to day performance of testing activities and test results, and discussed potential problem areas with cognizant startup personnel to determine the status and timing of corrective action.

No violations or deviations were identified.

## 12. Site Activities of Interest (71302)

### a. Management Changes

During this inspection period, the following changes have been made in the site management structure:

- (1) The BA Project Manager position was abolished.
- (2) The BA Manager of Quality and Technical Services resigned effective August 30, 1985.
- (3) IP announced a new position - Assistant to the Manager of Startup. This position is intended to coordinate support activities between the Startup, Construction, Engineering, and Maintenance organizations.

### b. NRC Caseload Forecast Panel Site Visit

The NRC Caseload Forecast Panel (CFP) visited the Clinton site on July 23-24, 1985. The CFP reviewed the status of construction, preoperational testing, and preparations for plant operation. The resident inspectors provided support for and participated in the CFP.

c. Baldwin Associates (BA) Document Review Group (DRG) Management

IP notified the Clinton Resident Office that the IP - Manager, Quality Assurance had assumed line responsibility for direction of the BA DRG. The BA Manager, DRG no longer reports to BA Q&TS management for day to day direction of DRG activities.

13. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, violations, or deviations. Two unresolved items disclosed during this inspection are discussed in paragraphs 7.a and 7.b.

14. Open Items

Open items are matters which have been discussed with the applicant, which will be reviewed further by the inspector, and which involve some action on the part of the NRC or applicant or both. One open item disclosed during this inspection is discussed in paragraph 6.a.

15. Exit Meetings (30703)

The inspectors met with applicant representatives (denoted in paragraph 1) throughout the inspection and at the conclusion of the inspection on August 19, 1985. The inspectors summarized the scope and findings of the inspection activities. The applicant acknowledged the inspection findings.

The inspectors also discussed the likely informational content of the inspection report with regard to documents or processes reviewed by the inspectors during the inspection. The applicant did not identify any such documents/processes as proprietary.

The resident inspectors attended exit meetings held between Region III and regional based inspectors and the applicant as follows:

<u>Inspector(s)</u>	<u>Date</u>
Paul	July 19, 1985
Kaufman, Schapker, Jablonski	July 12, 1985
Sutphin, Westberg	July 25, 1985
Love	August 1, 1985