

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-461/85041(DRS)

Docket No. 50-461

License No. CPPR-137

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

Facility Name: Clinton Nuclear Power Station, Unit 1

Inspection At: Clinton Site, Clinton, Illinois

Inspection Conducted: July 15 through September 30, 1985

Inspector: R. S. Love *R.S. Love*

*10/21/85*  
Date

*Cordell C. Williams*  
Approved By: C. C. Williams, Chief  
Plant Systems Section

*10/21/85*  
Date

Inspection Summary

Inspection on July 15 through September 30, 1985 (Report No. 50-461/85041(DRS))

Areas Inspected: Routine, unannounced inspection of licensee activities in the area of: action on previous inspection findings; action on findings identified at other nuclear facilities that may impact Clinton; action on Corrective Action Request 248; vendor documentation; and as-built walkdown of the electrical and instrument and control systems. The inspector also accompanied NRR Instrument and Control Systems Branch reviewers during their site visit. This inspection involved a total of 207 inspector-hours by one NRC inspector, including 37 inspector-hours on backshift and 40 inspector-hours in-office.

Results: Of the areas inspected, one violation was identified (failure to verify the availability and acceptability of vendor documentation - Paragraph 5.b). In addition, two unresolved items (Paragraphs 7.c and 8.a) and eight open items (Paragraphs 3.d, 4.b (two items), 6.a(2), 6.a(3), 9.c 9.e, and 9.i) were identified.

## DETAILS

### 1. Persons Contacted

# D. P. Hall, Vice President  
#\*F. A. Spangenberg, Director, Nuclear Licensing  
\*J. W. Wilson, Plant Manager  
#\*J. S. Perry, Manager, Nuclear Programs Coordinator  
\*H. R. Victor, Manager, NSED  
#\*G. W. Bell, Director, Construction and Procurement QA  
\*R. E. Campbell, Director, Quality Systems and Audits  
#\*J. F. Palchak, Supervisor, CCCD  
\*R. P. Riedel, Assistant Director of Construction  
\*J. A. Brownell, Licensing Specialist, NSED  
# A. L. Ruwe, Assistant Director, NSED  
# J. P. O'Brien, Supervisor, C&I, NSED  
# D. L. Hdesinger, Director, Startup Testing  
\*J. Greenwood, Manager, Power Supply (Soyland/WIPCO)  
# H. E. Daniels, Jr., Project Manager  
# R. W. Greer, Manager, Quality and Technical Services (assigned to BA)  
# K. A. Baker, I&E Interface, Licensing  
# G. L. Edgar, Attorney (N&H)  
G. Gregory, Supervisor, C&I, NSED  
R. S. Richey, Assistant Power Plant Manager, Maintenance  
H. R. Lane, Director, Design Engineering  
D. W. Hillyer, Supervisor, Radiation Protection  
J. E. Loomis, Construction Manager  
E. W. Kant, Assistant Manager, NSED  
J. Greene, Manager of Startup  
R. Kennedy, Quality Assurance Engineer  
R. Collings, Quality Assurance Engineer  
T. Zwick, Quality Assurance Engineer  
G. Bousquet, Quality Assurance Engineer  
W. Connell, Manager, Quality Assurance  
D. Lafever, Quality Assurance Engineer (2nd shift)  
J. Verdeber, Mechanical Engineer, NSED  
H. Skutelsky, Mechanical Engineer, NSED  
T. Veres, Startup Engineer  
G. Beigay, Walkdown Engineer  
D. Bass, Walkdown Engineer  
W. Leigh, Startup Group Leader  
R. Stokes, Primary Engineer, Startup

### MCC Powers

R. A. Neary, Quality Assurance Manager  
C. Meece, Site Quality Assurance  
S. Chestney, Lead Engineer

Baldwin Associates (BA)

#\*E. P. Rosol, Project Manager

#\*J. L. Thompson, Manager, Quality Engineering

L. W. Osborne, Manager, Quality and Technical Services

Sargent & Lundy (S&L)

\*D. K. Schopfer, Site Manager

General Electric Company (GE)

# D. L. Arndt, Senior Electrical Construction Engineer

R. Stanisic, Electrical Engineer

State of Illinois

# A. Samelson, Assistant Attorney General

# G. C. Minor

Nuclear Regulatory Commission (NRC)

# R. A. Kendall, Instrumentation and Control Review (ICSB) NRR

# M. Yost, Consultant to NRC (EG&G)

\*H. H. Livermore, Senior Resident Inspector

\*T. P. Gwynn, Section Chief

The inspector also contacted and interviewed other licensee and contractor personnel during this inspection.

\*Denotes those present at the exit interview on August 1, 1985.

#Denotes those present at the exit interview on September 5, 1985.

2. Licensee Action on Previous Inspection Findings

a. (Closed) Unresolved Item (461/83-02-02): During a previous inspection it was identified that BA had numerous open audit findings against the emergency diesel generator (D/G) fabricator, Steward and Stevenson. In addition, much of vendor documentation for the D/Gs had not been received by the licensee. A review of audit reports indicated that the open findings and concerns were satisfactorily closed in followup audits dated March 9, 1984, and October 17, 1984. A review of vendor documentation indicated that the required documents were available and adequate.

b. (Closed) Open Item (461/84-32-02): During a previous inspection it was identified that there were inconsistencies in the qualification/certification packages for two QC inspectors. During this inspection, the inspector verified that the inconsistencies had been corrected and determined that the subject inspectors were qualified per ANSI N45.2.6-1978.

- c. (Closed) Open Item (461/84-32-03): During a previous inspection it was identified that MCC Powers, a BA subcontractor, would be installing safety-related instrument tubing for the HVAC systems. During this inspection, the inspector reviewed: the qualifications and certifications of inspection personnel; inspection and test records for safety-related instrument tubing installations; drawing control; and performed a physical walkdown of approximately 40% of the installed systems. At the time of this inspection, MCC Powers had completed approximately 80% of their safety-related work activities. No violations or deviations were identified.
- d. (Closed) Violation (461/84-43-01): During a previous inspection it was identified that the licensee failed to establish measures to protect instrumentation piping and fittings from entry of foreign material. In addition to correcting deficient areas, the licensee upgraded the level of housekeeping in the power block from level V to level IV as defined in ANSI N45.2.3. During a tour of the power block, no violations or deviations were identified in the areas of housekeeping and storage and preservation of material.
- e. (Closed) Violation (461/84-43-02): During a previous inspection it was identified that certain vendor documents were incomplete in that they were missing a signature or were not dated. The licensee has confirmed that the ASME Code, Section III, requirements for certification are satisfied by the NPV-1 Data Report and that the supplemental documents that were not signed/dated are not required for certification. This was found to be acceptable by the inspector.
- f. (Closed) Open Item (461/84-43-04): During a previous inspection it was learned that the licensee had plans to cross-train QC inspectors and Technical Services (TS) inspectors. The inspector wanted to verify that the inspectors were being properly cross-trained, qualified, and certified. During this inspection the inspector was informed that the proposed plan for cross-training QC and TS inspectors would not be implemented; therefore, this item is closed.
- g. (Closed) Open Item (461/85002-01): During a previous inspection an instrumentation piping engineer informed the Region III inspector that he had been told to "look for another job because at the first reduction-in-force he would be terminated because he had a bad attitude and this was exemplified by his talking to the NRC." This item has been entered into the NRC Allegation Tracking System (ATS No. RIII-85-A-0026) pending final resolution by the U.S. Department of Labor. A hearing in this matter is scheduled for October 15, 1985, in accordance with 29 CFR 24.
- h. (Closed) Open Item (461/85002-02): During a previous inspection drafting errors were observed on instrumentation isometric drawings (ISO) prepared by Baldwin Associates. The licensee documented this observation on IP QA Finding No. C-85-017. All ISOs issued prior to February 11, 1985, were reviewed for drafting errors. This review

identified 29 ISOs with incorrect instrument numbers and one piping termination error (MS-949). All items have been corrected. Procedure BAP 1.18 was revised to clearly define the checker's responsibilities and to incorporate the use of a drawing review checklist, form JV-1365. IP QA Finding No. C-85-017 was closed on March 28, 1985. The corrective actions were found to be adequate.

- i. (Closed) Open Item (461/85002-03): During a previous inspection it was observed that redundant sensing lines within certain Instrument Panels were within 1" of each other. The licensee determined that these panels are designed for and installed in non-hazardous locations and do not require exceptional physical barriers or distance to assure system performance. In addition, the 2 out of 4 logic coupled with proper electrical separation ensures that, upon the loss of a single panel, the system will function safely as designed. The above information satisfies the inspector's concern.
- j. (Closed) Open Item (461/85002-04): During a previous inspection the inspector was informed that BA had no plans to as-built the instrument sensing line ISOs. During this inspection, the inspector was informed that the existing traveler program will accurately reflect the actual as-built configuration. This is accomplished with a final "inspection only" traveler that requires BAQC to verify that the sensing line is installed per the drawing package. Acceptance of this "inspection only" traveler assures agreement between the installation and the drawings. The above information satisfies the inspector's concerns.
- k. (Closed) Open Item (461/85012-04): Region I received a construction deficiency report (CDR) on Gould Molded Case Circuit Breakers. These breakers failed to pass the instantaneous overcurrent trip tests. The licensee was provided a copy of the CDR and were requested to review this matter for applicability to the Clinton Power Station. IP purchased Gould circuit breakers through Contract K-2976. The vendor bill of material for this contract was reviewed by the licensee and no HE3M breakers were found. IP does have HE3B circuit breakers which have been tested satisfactorily. The above information satisfies the inspector's concern.

### 3. Licensee Action on Findings at Other Nuclear Facilities

During the entrance interview on July 15, 1985, the Region III inspector informed IP management of potential problems/defects that could impact the Clinton Power Station (CPS). Following is a summary of the problems/defects identified at other nuclear facilities and IP's investigation for applicability to CPS:

- a. Region I was notified of a potential reportable deficiency per 10 CFR 21, regarding a defect in electrical penetrations supplied by Conax Buffalo Corporation. It was identified that four electrical penetrations installed at Vermont Yankee contained

teflon insulation and sealant material. Teflon is highly susceptible to damage from radiation. Failure of the insulation or sealant material could lead to a significant safety hazard.

The IP NSED responsible engineer contacted the vendor (Conax) and was informed that the vendor had stopped using teflon approximately 10 years ago. CPS electrical penetrations were fabricated subsequent to the discontinuation of teflon by the vendor. Based on this information, it was determined that this potential defect is not applicable to CPS.

- b. Region III was notified of a potential reportable design deficiency per 10 CFR 50.55(e), regarding the violation of separation criteria on the power supply to the neutron monitoring system. This deficiency occurred when the AE inadvertently connected the Division 1 and Division 2 neutron monitoring power supplies to the same Division 1 power source.

General Electric has reviewed the design specifications/drawings and determined that this design defect is not applicable to CPS. In conjunction with the General Electric electrical engineer, the Region III inspector verified that each neutron monitoring divisional power supply is from a separate power source.

- c. General Electric has notified the NRC of a potential reportable deficiency per 10 CFR 21, regarding an unqualified test switch, CR 2940, installed in the Standby Liquid Control System (SLCS). It was identified that two CR 2940 switches are installed in each of CPS's two SLCSs. During this inspection, the inspector verified that General Electric had issued FDI No. SKUH to replace the unqualified test switches at CPS.
- d. Region I was notified of a potential reportable deficiency per 10 CFR 50.55(e), regarding Reliance motors utilized by Limitorque in the operators for motor-operated valves (MOV). It appears that the magnesium rotors may not be environmentally qualified in that magnesium rotors quickly corrode when exposed to a steam environment. The licensee contacted Limitorque and were informed that the potential deficiency with the magnesium rotors is still under investigation and that CPS will be notified of corrective action required, if any, when the study has been completed. Pending a resolution of this potential deficiency, this item is open (461/85041-01).

#### 4. Followup on Corrective Action Request (CAR) 248

The Clinton NRC Resident Inspector's Office provided Region III, Division of Reactor Safety (DRS), a copy of CAR 248 and requested DRS review of this CAR for technical adequacy. During this inspection, the Region III inspector reviewed the applicable records and conducted licensee and contractor interviews with personnel associated with this CAR. Following is a summary of the inspector's observations:



- a. CAR 248 was prepared on June 17, 1985, to document the following deficiencies:
- The Storage and Maintenance Department acting manager gave verbal direction to assign Level "B" storage requirements to all items when preparing the SMIR cards and to downgrade the item to Level "C" when requisitioned for installation. There was no supporting documentation to justify the reduced storage level requirements. This was a violation of ANSI N45.2.2.
  - Approximately 4,000 items were purchased under a "bill-of-material" instead of a K-specification. As a result, no storage and maintenance requirements were identified on SMIR cards and no storage and maintenance activities were performed on these items.
  - Storage and Maintenance requirements were being revised by inter-office memos and letters which violated procedure BAP 2.4 and vendor storage and maintenance requirements.
- b. The following actions have been or are being implemented by BA for all items under their control:
- The practice of downgrading storage levels has been discontinued as of April 10, 1985.
  - A review of all SMIR cards is being conducted to assure all items requiring a storage level higher than a "C" are being adequately protected.
  - Any items that have not been stored/maintained properly are being evaluated for degradation and any deficiencies noted will be corrected and the SMIR card revised to reflect the proper storage and maintenance requirements.
  - An indepth review of items on the bill-of-material is being conducted to identify all items with storage and maintenance requirements. These items will be inputted into the Storage and Maintenance (S&M) program and will be evaluated for degradation. Any deficiencies noted will be corrected.
  - The subject letters/memos are being reviewed for applicability and technical accuracy. Any practices that are not justified will be discontinued and all items impacted by the letters/memos will be evaluated for discrepancies with S&M requirements. All discrepancies will be documented and appropriate corrective action taken.
  - When discrepancies in S&M requirements are identified, the vendor will be contacted for concurrence with present S&M conditions and/or direction for evaluation of equipment integrity.

- All S&M personnel are being retrained in the implementation of S&M procedure BAP 2.4.
- In that much of the equipment affected by CAR 248 has been turned-over to the licensee, BA notified the licensee of potential S&M deficiencies by a 50 PE 47 report on August 2, 1985.

Pending a review of BA's completed corrective actions to close out CAR 248, this item is open (461/85041-02).

Pending a review of IP's corrective action to identify and correct, as required, those items under their direct control that are affected by BA's CAR 248, this item is open (461/85041-03).

#### 5. Vendor Documentation Review

During this inspection, the Region III inspector reviewed the vendor documentation for the two emergency diesel generators installed at CPS as part of the Region's followup action on unresolved item 461/83-02-02. During this review, the following observations were made:

##### a. Diesel Generator 1DG01KB

- On May 5, 1982, a Documentation Checklist (Form JV-146) was prepared to specify the documentation requirements for diesel generator 1DG01KB.
- On November 29, 1982, diesel generator 1DG01KB was received on Receiving Inspection Report (RIR) No. S-18413.
- On December 13, 1982, Form JV-146 was completed, signifying that all the required documentation was received and was acceptable. RIR No. S-18413 was also noted on this form to "tie" the documentation to the item(s) received.

The RIR, Form JV-146, and applicable documentation were found acceptable.

##### b. Type 47-22" Flex Exhaust (1 ea) and Type 47-20" Flex Exhaust (2 ea)

- On May 12, 1983, the subject flex was received on RIR No. S-18401-A.
- On May 13, 1983, Vendor Documentation Review Sheet (Form JV-874) was completed to indicate that no documentation was required for the three subject items.
- The Document Review Group (DRG) performs an independent review of documentation to verify accuracy, completeness, etc. Any discrepancies noted are documented on a Document Exception List (DEL), Form JV-935-1.



- DEL No. A053848, Item 14, indicates that Form JV-146 (Documentation Checklist) was missing from RIR package S-18401-A.
- On March 29, 1985, Item 14 for DEL No. A053848 was closed with the following statement: "Completed JV-146 placed into RIR S-18401-A, accept per GR 27 R/2/BAP 2.1.1."
- GR 27, R2 (Generic Resolution No. 27, Revision 2) provides an acceptable resolution when Forms JV-146 or JV-155 (QC Receiving Inspections) are missing from the Record Packages. The resolution states, in part, "QE DEL Resolves: Obtain an acceptable copy of the completed form (JV-146 or JV-155), or the appropriate Discipline completes new acceptable JV-146 or JV-155 in accordance with...."
- A review of the record package for RIR No. S-18401-A showed two JV-146 forms in the records package. Both of the forms indicated that the checklist was prepared for RIR No. S-18413, and were signed off as being complete on December 13, 1982. (See Paragraph 5.a above for more information on RIR No. S-18413). These JV-146 forms for RIR No. S-1843 were altered by: (1) stamping RIR No. S-18401-A on the document; and (2) lining out RIR No. S-18413, entering RIR No. S-18401-A, and initialing and dating the changes.
- Subsequent to the inspector's findings, the licensee's contractor (BA) prepared CAR 256, dated July 19, 1985. The inspector was informed by IPQA Management that as of September 6, 1985, the licensee has identified approximately 50 records packages where, due to a misinterpretation of GR-27, the JV-146 or JV-155 forms (Documentation Checklists) have been incorrectly revised by changing the RIR number.

The licensee was informed that failure to establish measures to assure that purchased items conform to procurement documents by verifying the availability and acceptability of vendor documentation is a violation of Criterion VII of 10 CFR 50, Appendix B (461/85041-04).

#### 6. Verification of As-Builts - Instrumentation - Mechanical

During this inspection, the Region III inspector performed a 100% walkdown of instrumentation piping associated with the High Pressure Core Spray (HPCS) and Low Pressure Coolant Injection (LPCI) systems. This walkdown included all items between the isolation valve at the process line and the applicable instrument transmitter, and included the instrument rack. Attributes inspected were: location, configuration, identification, separation, slop, size, and operability. Drawings utilized were those that will be readily available to site operations personnel when plant operation is initiated. In general, these systems have been turned over to IP. There were instances identified

where instrument transmitters, piping caps, etc., had not been installed; however, these conditions had been identified by the licensee on the configuration status revisions of the M05 and M10 series drawings that were being utilized for the walkdowns. Following is a summary of the observations made during the walkdown:

a. HPCS System

(1) The following drawings were utilized:

- M05-1074, Revision CS-8, dated July 3, 1985
- M10-1074, Sheet 1 of 5, Revision CS-3, dated June 10, 1985
- M10-1074, Sheet 2 of 5, Revision CS-3, dated June 10, 1985
- M10-1074, Sheet 3 of 5, Revision CS-4, dated June 10, 1985
- M10-1074, Sheet 4 of 5, Revision CS-4, dated June 10, 1985
- M10-1074, Sheet 5 of 5, Revision CS-4, dated June 10, 1985

(2) During a review of the instrument lines associated with the condensate storage tank water level, it was observed that the isolation, vent, and drain valves for level transmitters 1E22-N054C and N054G were not shown on drawing M10-1074, Sheet 4 of 5. After some research by the licensee, the inspector was informed that these valves were depicted on drawing M10-1201, Sheets 7 and 21. It was also observed that drawing M10-1201 is not referenced on drawings M05-1074 or M10-1274. The inspector expressed the concern as to the ability of site operations personnel to get to the M10-1201 drawing to locate the subject valves without this drawing being referenced on the M05-1074 and M10-1074 drawing. Pending an interview of the operations personnel to satisfy the inspector's concern, this item is open (461/85041-05).

(3) During a review of the instrument lines associated with the HPCS line break detection system, it was observed that what appeared to be two vent valves were not shown on drawing M10-1074, Sheet 5 of 5. The inspector was informed that these valves were shown on a GE drawing, number not provided. The GE drawing is not referenced on the M05-1074 or M10-1074 drawings. Pending verification that: (1) the subject valves are shown on the GE drawing; (2) the GE drawing is readily available to site operations personnel; and (3) site operations personnel can get to the GE drawing to locate the subject valves without this drawing being referenced on the M05-1074 or M10-1074 drawings, this item is open (461/85041-06).

- (4) During a review of the instrument lines routed to instrument panel 1H22-P024, it was observed that there were various separation violations to Regulatory Guide 1.29, "Seismic Design Classification." Further research revealed that these items had been previously identified by the licensee's Interaction Analysis Group on Potential Interaction Reports (PIR) F-757, F-630, F-978, and F-979. This resolves the inspector's concerns in this area.

b. LPCI System

- (1) The following drawings were utilized:

- M05-1075, Sheet 1 of 4, Revision CS-7, dated July 3, 1985
- M05-1075, Sheet 2 of 4, Revision CS-9, dated July 3, 1985
- M05-1075, Sheet 3 or 4, Revision CS-7, dated July 3, 1985
- M10-1075, Sheet 1 of 17, Revision CS-3, dated June 13, 1985
- M10-1075, Sheet 2 or 17, Revision CS-2, dated June 13, 1985
- M10-1075, Sheet 9 of 17, Revision CS-3, dated June 13, 1985
- M10-1075, Sheet 10 of 17, Revision CS-2, dated June 13, 1985
- M10-1075, Sheet 12 of 17, Revision CS-3, dated June 13, 1985
- M10-1075, Sheet 16 of 17, Revision CS-2, dated June 13, 1985

- (2) During a review of instrument line routing in the Residual Heat Removal (RHR) pump rooms (A, B, and C), it was observed that many of the isolation and high point vent valves associated with plant instrumentation were inaccessible for operation without the use of a portable ladder or mobile platform. The following are examples of this condition: (1) high point vent valves for instruments 1E12-R008A, N055A, and N056A are approximately 14 feet above floor level; (2) high point vent valve for instrument 1E12-N007A is approximately 20 feet above floor level; and (3) six isolation valves at "X" line are approximately 15-24 feet above floor level. These examples are in pump room "A"; however, this is a typical condition for all three pump rooms. The licensee's position is that these valves are infrequently operated during normal plant operation and it is therefore unnecessary to install permanent access ladders/platforms to those valves. The licensee's position was accepted by the inspector.

In the area of instrumentation as-built walkdown, no violations or deviations were identified. However, two open items, Paragraphs 6.a(2) and 6.a(3), were identified and will be addressed in subsequent inspections.

7. Verification of As-Builts - Electrical and I&C

During this inspection, the Region III inspector performed a walkdown of the electrical and instrument and control system associated with the High Pressure Core Spray (HPCS) system. This walkdown included an inspection/review of: power, control, and instrument cable routing, identification, and termination; circuit breaker type, size and rating; overload type, size, rating, and setting; fuse type and size; drawings and specifications and changes to these documents. Following is a summary of the observations made during this walkdown:

a. The following drawings were utilized:

- E02-1HP01, Revision B
- E02-1HP99 series, Various Sheets and Revisions
- E03-1HP00 series, Various Sheets and Revisions
- E03-1E22-S002 series, Various Sheets and Revisions
- E03-1E22-S004 series, Various Sheets and Revisions
- E03-1P702 series, Various Sheets and Revisions
- E03-1P708 series, Various Sheets and Revisions
- E03-1P709 series, Various Sheets and Revisions

b. During a review of cable installation and terminations in Motor Control Center (MCC) E22-S002, it was observed that a black wire, E22-F124, was landed on terminal 24. Drawing E03-1E22-S002, Sheet 2, Revision E, indicated that this black wire had been deleted per FECN No. 6713. Maintenance Work Request (MWR) B02096 had been issued to perform the work in accordance with the FECN. The work was performed, reviewed and accepted per QCIP No. 1095. After reviewing the FECN, there was doubt as to whether the subject wire should be deleted or not. The IP Startup Systems Engineer prepared Field Problem Report (FPR) No. 5790, requesting clarification in this matter. The disposition of this FPR was that black wire, E22-F124, should be removed from terminal 24 in accordance with FECN 6713. This was accomplished on MWR B18193. This action addresses the inspector's concerns in this area and appeared to be an isolated case.

c. During a review of HPCS MCC E22-S002, the inspector was informed of various problems encountered with this MCC during the testing of the HPCS system. The inspector was provided copies of: GE Field Deviation Disposition Request (FDDR) No. LH1-5038, Revisions 0 through 9; IP Nonconforming Material Reports (NCMR) 1-1531 and 1-1570; IP Condition Reports (CR) 1-85-07-016 and 1-85-07-016; Field Problem Report (FPR) 5489; and Maintenance Work Requests (MWR) B-18937 and B-18938. Following is a brief summary of the problems identified and corrective actions taken or proposed as of August 1, 1985:

- (1) FDDR LH1-5038, Revision 0, dated August 21, 1984. Heater tables and time current curves for motor overload (OL) heater relays located in MCC E22-S002 were not provided to IP. Revision 0 of this FDDR transmitted this information to IP after GE verified that the information was applicable to CPS.
- (2) FDDR LH1-5038, Revision 1, dated September 27, 1984. This FDDR revision transmitted additional information not supplied in Revision 0. This included calculations to determine the correct size of OL heaters.
- (3) FDDR LH1-5038, Revision 2, dated October 2, 1984. This FDDR revision identifies delivery problems with the OL heaters specified in Revision 1 of this FDDR. To support the IP testing schedule, unqualified OL heaters were installed. The heaters will be replaced as qualified heaters are received.
- (4) FDDR LH1-5038, Revision 3, dated October 5, 1984. This revision superseded Revision 2. Additional information provided. Old GE catalog heater numbers used decimal points and the decimal point has been deleted from the new catalog numbers. This revision states that the numbers with or without the decimal are equal, e.g., C239A is equal to C2.39A.
- (5) FDDR LH1-5038, Revision 4, dated November 14, 1984. This revision corrects a drafting error on Revision 1 of this FDDR.
- (6) FDDR LH1-5038, Revision 5, dated February 7, 1985. This revision identified an error in Revision 1. Revision 1 data indicated that the full load rating for motor 1E22-C003 as 4.8 amps and it should be 6.5 amps. The applicable drawing was corrected and GE supplied a replacement circuit breaker and three OL heaters of the proper size for the subject motor.
- (7) FDDR LH1-5038, Revision 6, dated March 4, 1985. This revision corrects a typographic error in Revision 5 of this FDDR.
- (8) FDDR LH1-5038, Revision 7, dated June 28, 1985. This revision provides trip settings as follows:

<u>Cubicle No.</u>	<u>Setting</u>
1C	1000 amps, position 10
2B	18 amps, position 4
2C	68 amps, position 2
2D	30 amps, position 2
2E	140 amps, position 2
3C	120 amps, position 6
3D	190 amps, position 4
3E	190 amps, position 4

<u>Cubicle No.</u>	<u>Setting</u>
4B	54 amps, position 6*
4C	94 amps, position 4
4D	140 amps, position 2

\*The inspector was informed that the setting for the 4B circuit breaker had to be returned to its original setting of 66 amps, position 8, because the breaker tripped at the lower setting.

- (9) FDDR LH1-5038, Revision 8, dated July 12, 1985. This revision corrects the manual document number transmitted by Revision 0.
- (10) FDDR LH1-5038, Proposed Revision 9, request an OL heater change for the DG Circulating Oil Pump motor and a trip setting change for cubicles 3D, 3E, and 4C.
- (11) FPR No. 5489, dated July 8, 1985. This FPR identifies problems encountered with circuit breakers in cubicles 3D, 3E, 4C, and 4D during startup testing, as follows:
  - (a) Cubicles 3D (Storage Tank Test Bypass Valve 1E22-F010) and 3E (Condensate Storage Tank Test Valve 1E22-F011) - When a valve closure signal is received while opening these valves from the control room hand switch, the circuit breakers will trip on instantaneous overcurrent approximately 30% of the time.
  - (b) Cubicles 4C (Suppression Pool Pump Suction Valve 1E22-F015) and 4D (Suppression Pool Test Bypass Valve 1E22-F023) - These circuit breakers trip under normal operating conditions approximately 10% of the time.
- (12) CR No. 1-85-07-016, dated July 9, 1985, was issued to document the "intermittent tripping of GE 'Mag-Break' type breakers in HPCS system." FPR No. 5489 was attached to this Condition Report.
- (13) NCMR No. 1-1531, dated July 17, 1985, was issued to upgrade CR No. 1-85-07-016 to a nonconforming material report. Also attached to this NCMR is a copy of GE's proposed Revision 9 of FDDR LH1-5038, see subparagraph (10) above.

IP determined that the root cause of the intermittent tripping of the circuit breakers (Reference: FPR No. 5489) was caused by incorrect sizing by GE. GE originally supplied the breaker trip settings based upon design information. The actual field conditions require these trip settings to be revised.



- (14) NCMR No. 1-1570, dated July 26, 1985 and CR 1-85-07-053, dated July 22, 1985, were prepared to document that, "During the performance of GTP-46 retests for the breakers in 480V MCC E22-S002 compartments 3D and 3E associated with valves 1E22-F010 and 1E22-F011 would not trip as required." These breakers were replaced with temporary breakers under MWRs B-10501 and B-10502. MWRs B-18937 and B-18938 were issued to replace the temporary unqualified breakers with the permanent qualified breakers as they are received.

Pending a review of: FDDR LHI-5038 (all revisions), NCMRs 1-1531 and 1-1570, MWRs B-18937 and B-18938 for proper closure; GE calculations for breaker size and OL settings for the HPCS MCC; and verification of the installed equipment based on the GE calculations and as-built drawings, this item is unresolved (461/85041-07).

#### 8. Comparison of As-Built Plant to FSAR Description

- a. During this inspection, the Region III inspector performed a walkdown of the electrical and instrumentation and control systems associated with the HPCS system as discussed in Paragraphs 7.a through 7.c above. This information was compared to the applicable sections of Chapters 7 and 8 of the Clinton FSAR. With respect to the loads on HPCS MCC 1E22-S002, it was observed that there was conflicting load information in Table 8.3-16, and Figures 8.3-2a, Sheet 2 or 3, and 8.3-3, Sheet 36 of 173, of the Clinton FSAR. The information contained in drawing E02-1HP01, Revision B and FDDR LHI-5038, Revision 9, are also in conflict with each other and the FSAR. Following is a table that delineates these conflicts. When testing has been completed on the HPCS MCC, the final revision to FDDR LHI-5038 should depict the as-built load data circuit breaker and OL sizes and OL settings. Pending a review of the: final FDDR revision for this MCC (1E22-S002); as-built drawings; and figures and table contained in Chapter 8 of the Clinton FSAR, this item is unresolved (461/85041-08).

Load Data for HPCS MCC 1E22-S002

Cubicle	Service	Table 8.3-16	Figure 8.3-2a	Figure 8.3-3	Drawing E02-1HP01	FDDR LH1-5038
1A	Metering and Relaying Xfmr.		1 kVA	1 kVA	1 kVA	*1 kVA
2A	DGIC Immersion Heater	15 kW	15 kW	15 kW	15 kW	15 kW
2B	DGIC Circ. Oil Pump	1 HP	1 HP	1 HP	1 HP	1 HP
2C	HPCS Water Leg Pump	5 HP	3 HP	5 HP	5 HP	5 HP
2D	Valve 1E22-F001	0.66 HP	0.66 HP	0.66 HP	0.66 HP	0.66 HP
2E	Valve 1E22-F004	10.5 HP	10.5 HP	10.5 HP	10.5 HP	10.5 HP
3AL	HPCS Battery Charger	22.4 kVA		7.5 kVA	22.4 kVA	*50 amps
3B	DGIC Gen. Space Heater	3 kW	1.6 kW	3 kW	1.6 kW	1.6 kW
3C	DGIC Air Compressor	7.5 HP	7.5 HP	5 HP	7.5 HP	10 HP
3D	Valve 1E22-F010	13 HP	13 HP	13 HP	13 HP	13.1 HP
3E	Valve 1E22-F011	13 HP	13 HP	13 HP	13 HP	13.1 HP

Cubicle	Service	Table 8.3-16	Figure 8.3-2a	Figure 8.3-3	Drawing E02-1HP01	FDDR LH1-5038
4A	HPCS Area Xfmr. and Panel	10 kVA	5 kVA		5 kVA	5 kVA
4B	Valve 1E22-F012	3.2 HP	3.2 HP	3.2 HP	3.2 HP	3.2 HP
4C	Valve 1E22-F015	5.3 HP	5.3 HP	5.3 HP	5.3 HP	5.3 HP
4D	Valve 1E22-F023		10 HP	10 HP	10 HP	9.9 HP
5B	NSPS Div. 3 Xfmr.	10 kVA	10 kVA	7.5 kVA	10 kVA	*10 kVA

\*This information is from Revision 7 of the FDDR.

- b. During this inspection, the Region III inspector performed a 100% walkdown of the instrument sensing lines associated with the HPCS and LPCI systems as delineated in Paragraphs 6.a and 6.b above. This information was compared to the applicable sections of Chapters 5 and 6 of the Clinton Final Safety Analysis Report (FSAR) and were found acceptable. Examples:

- (1) LPCI drawings M05-1075, Sheets 1-3, are the same as Figure 5.4-13, Sheets 1-3, of the FSAR
- (2) HPCS drawing M05-1074 is the same as Figure 6.3-1 of the FSAR

No violations or deviations between the FSAR and plant configuration were observed in the HPCS and LPCI instrument piping systems; however, an unresolved item requiring followup is identified in Paragraph 8.a.

#### 9. Instrument and Control Systems Branch (NRR) Site Visit

During this inspection, the Region III inspector accompanied two NRC reviewers from the NRR Instrument and Control Systems Branch (ICSB) during their site visit. The items reviewed were selected to aid the staff in their evaluation of the implementation of I&C systems for standard review areas (e.g., physical separation between redundant safety-related circuits within instrument cabinets), and special interest areas addressed during the licensing review. The site visit concentrated on those areas which will aid the staff in resolving outstanding and confirmatory issues listed in Chapter 7 (Instrumentation and Control) of the Clinton SER. The following items were inspected/reviewed during this site visit:

- a. The nuclear system protection system (NSPS) instrument cabinet wiring was inspected for identification of safety-related and associated circuits, physical separation provided between redundant safety-related circuits and between safety-related and non-safety-related circuits, and isolation provided for interdivisional wiring.
- b. The internal wiring of the main control boards and control room back row panels was inspected for physical separation of redundant safety-related circuits and between safety-related and non-safety-related circuits.
- c. The PGCC floor raceway (metal barriers) used to provide separation between redundant safety-related circuits and between safety-related and non-safety-related circuits were inspected. At the time of the inspection, the floor raceway covers had not been installed. Region III was requested to followup on this item. Pending verification of proper installation of floor raceway covers in the control room, this item is open (461/85041-09).

- d. Reviewed the interfaces between the NSPS and the self-test system (STS), and the capability for manually testing NSPS circuits independent of the STS (i.e., channel checks, channel functional checks, and channel calibrations). Reviewed how plant personnel interface with the STS via the plant computer using the diagnostic terminal to isolate STS detected faults and to control the STS.
- e. Reviewed the instrumentation provided at the remote shutdown panels, and the location of the transfer switches. Also inspected the panel internal wiring for separation between safety-related and non-safety-related circuits. During a previous modification to the remote shutdown panel, the panel was rotated 180° to provide better personnel access to the panel. During this inspection, it was observed that the panel lighting had not been relocated when the panel was rotated. A review of the applicable drawings indicates that new lights will be installed in front of the remote shutdown panel. Region III was requested to followup on this item. Pending verification of the installation of new lights in front of the remote shutdown panel, this item is open (461/85041-10).
- f. Reviewed the operation of Division 2 equipment used to achieve reactor shutdown from outside the control room, assuming Division 1 power is unavailable. Also observed that a reactor trip may be accomplished from outside the control room by manually opening circuit breakers in NSPS distribution panels C71-P11A and C71-P11B.
- g. The instrument sensing lines, transmitters, and associated circuits used to provide the low reactor pressure permissive interlock function for the low redundant low pressure ECCS systems were inspected.
- h. To verify the capability for testing, walked through the planned testing procedures (channel functional tests, logic tests, etc.) for automatic and manual testing of typical NSPS instrument, logic, and actuation channels, and the surveillance planned for the STS to ensure that it is functioning properly.
- i. During a review of the instrument racks inside containment at the 759' elevation, the following observations were made:
  - (1) safety-related and non-safety-related flexible conduits were ty-rapped together in rack 1H22-P002.
  - (2) a non-safety-related flexible conduit for transmitter B33-N050A was damaged in rack 1H22-P004.
  - (3) a Division 3 (safety-related) flexible conduit for transmitter B33-N014C was damaged in rack 1H22-P022.

Region III was requested to followup on these discrepancies. Pending a review of the corrective actions on the three discrepancies identified above, this item is open (461/85041-11).

During the site visit by ICSB, no violations or deviations were identified. However, three open items requiring NRC followup were identified (Reference: Paragraphs 8.c, 8.e, and 8.i). The details of the NRR ICSB reviewed site visit will be documented in a forthcoming Trip Report.

#### 10. Electrical Construction Status

Following is Region III's estimate of the electrical construction status and estimated completion date for each commodity as of September 30, 1985. This data was obtained from a review of reports and personnel interviews.

<u>Commodity</u>	<u>To be Installed</u>	<u>Estimated Completion Date</u>
cable tray	basically complete	N/A
conduit	5,000 feet	10/15/85
cable	127,000 feet	11/08/85
cable terminations	20,000	11/22/85
raceway hangers	10,000	01/31/86
tray covers	no estimate	01/31/86

#### 11. Unresolved Items

An unresolved item is a matter about which more information is required to ascertain whether it is an acceptable item, an open item, a deviation, or a violation. Unresolved items disclosed during this inspection are discussed in Paragraphs 7.c and 8.a of this Inspection Report.

#### 12. Open Items

Open items are matters which have been discussed with the licensee, which will be reviewed further by the inspector, and which involves some action on the part of the NRC or licensee or both. Open items disclosed during this inspection are discussed in Paragraphs 3.d, 4.d (two items), 6.a(2), 6.a(3), 9.c, 9.e, and 9.i of this Inspection Report.

#### 13. Exit Interview

The Region III inspector met with the licensee representatives (denoted under Paragraph 1) at the conclusion of the onsite portion of the inspection on August 1 and September 5, 1985. The in-office portion of the inspection was discussed with Mr. J. A. Brownell, IP Licensing Specialist (NSD) by telecon by September 30, 1985. The inspector summarized the purpose and findings of the inspection. The licensee acknowledged this information. The inspector also discussed the likely informational content of the inspection report with regard to documents or processes reviewed during the inspection. The licensee did not identify any such documents or processes as proprietary.