

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-461/85036(DRS)

Docket No. 50-461


License No. CPPR-137

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

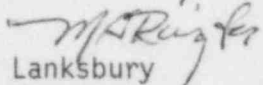
Facility Name: Clinton Nuclear Power Station, Unit 1

Inspection At: Clinton Site, Clinton, Illinois


Inspection Conducted: July 8 through August 20, 1985

Inspector: S. G. DuPont 

9/5/85
Date

R. D. Lanksbury 

9/5/85
Date

Approved By: M. A. Ring, Chief
Test Programs Section 

9/5/85
Date

Inspection Summary

Inspection on July 8 through August 20, 1985 (Report No. 50-461/85036(DRS))

Areas Inspected: Actions on previous inspection findings, action on 10 CFR 50.55(e), preoperational test procedure review, preoperational test witnessing and preoperational test program implementation verification. The inspection involved 135 inspector-hours onsite by two NRC inspectors including 35 inspector-hours onsite during off-shifts. In addition, the inspection involved 10 inspector-hours in the regional office.

Results: Of the five areas inspected, no violations were identified in three areas. One violation was identified in the remaining two areas (procedure not appropriate to the circumstances - Paragraph 4.b and failure to follow test sequence - Paragraph 5.c).

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DETAILS

1. Persons Contacted

- *D. P. Hall, Vice President, Nuclear
- *J. W. Wilson, Plant Manager
- *J. H. Green, Manager of Startup
- *J. S. Perry, Manager Nuclear Program Coordinator
- *E. J. Corrigan, Director, Engineering and Verification QA
- *F. C. Edler, Supervisor, Construction Startup Engineering
- *R. A. Baker, Licensing
- *J. A. Brownell, Staff Specialist - Licensing
- J. Miller, Director, Startup Programs
- D. Holesinger, Director, Startup Testing

The inspector also interviewed other licensee employees, including members of the quality assurance, startup and operating staff.

*Denotes those attending the exit interview on August 20, 1985.

2. Action on Previous Inspection Findings

- a. (Closed) Open Items (461/84-20-01; 461/85011-01; and 461/85011-02):
Revise Final Safety Analysis Report (FSAR) to clarify commitments to ANSI Standard 18.7 to indicate current duty load cycles for all safety-related batteries and to clarify shutdown service water pump ventilation fan handswitch operation. The inspector reviewed the FSAR change request, Amendment 34, which corrected the above open items. The amendment revised Table 8.3-8 to indicate the current 240 minute duty load cycles for the Divisions 1, 2, 3 and 4 batteries (461/85011-01). The FSAR has also clarified commitments to ANSI Standard 18.7-1976 in that startup complies with Section 5.2.6 which provides administrative controls for temporary electrical jumpers, lifted electrical leads and temporary trip point settings during preoperational testing. In addition, the handswitch operation of the shutdown service water pump ventilation fan was revised to agree with the actual as-built configuration. The inspector has no further concerns.
- b. (Closed) Open Item (461/85005-21): Implement no load and light load operating procedures for diesel generators. The inspector verified that no load and light load operating requirements are contained within the following surveillance procedures:

ISP 9080.01S, "Diesel Generator Operability - Manual," revised by Temporary Change 85-295.

ISP 9080.02S, "Diesel Generator Operability - Loss of Offsite Power," revised by Temporary Change 85-296.

ISP 9080.03S, "Diesel Generator Operability - ECCS," revised by Temporary Change 85-275.

ISP 9080.04S, "Diesel Generator Automatic Load Reject Verification," revised by Temporary Change 85-276.

ISP 9080.05S, "Diesel Generator 24 Hour Operability Checks - Division 1," revised by Temporary Change 85-277.

ISP 9080.08S, "Diesel Generator Operational Independence Verification," revised by Temporary Change 85-278.

The inspector has no further concerns.

- c. (Closed) Open Item (461/85005-22): Verify that tornado and missile protection is provided for diesel oil storage tank fill lines in accordance with Paragraph 9.6.3.2 of SER. The inspector verified by visual inspection that the fill line vent no longer prevented closure of the tornado and missile protection structure. Additional discussion is documented in Inspection Report 461/85020(DRS)) Paragraph 2. The inspector has no further concerns.
- d. (Closed) Open Item (461/85005-23): Verify installation of dessicant type air dryers upstream of diesel generator starting air receivers. The inspector reviewed drawings M05-1035, Sheets 1, 2 and 3 and verified that dessicant type air dryers 1DG21DA (Diesel Generator 1A), 1DG21DB (Diesel Generator 1B) and 1DG21DC (Diesel Generator 1C) were installed upstream of the air receivers. In addition, the inspector visually verified that 1DG21DA was physically installed upstream of the air receivers 1DG04TA and 1DG04TB for Diesel Generator 1A. The inspector has no further concerns for SER Item 9.6.5.
- e. (Closed) Open Item (461/85005-24): Implement prelubrication requirements for all diesel generators. The inspector reviewed the operating procedure IOP 3506.015, "Diesel Generator and Support System," and verified that Step 5.6 required verification of operation of the automatic continuous prelubrication system or to prelube the diesel generator in accordance with procedure 8207.01, "8000 Hour Diesel Generator Engine Inspection," prior to operation. The inspector has no further concerns with SER Item 9.6.6.
- f. (Closed) Open Item (461/85020-01): Preoperational test PTP-SX-01 does not fulfill the requirements of the FSAR in that the procedure does not test the following equipment: OVG-05SA, 1VX-13SA, OVG-07SA, and 1VV-09S. The inspector reviewed Revision 1 to PTP-SX-01 and verified that the above equipment is tested in accordance with the FSAR. The inspector has no further concerns.

3. Action on 10 CFR 50.55(e) Reports

(Closed) 50.55(e) Report (461/83-04-EE): Failure to note design changes on drawings. Field Deviation Disposition Requests (FDDR) and Field Disposition Instructions (FDI) were not being identified as outstanding against Sargent and Lundy (S&L) and General Electric (GE) drawings. Actions taken to correct and prevent recurrence of not identifying FDDR and FDIs were as follows:

- a. Baldwin Associates (BA) trained document control personnel to ensure compliance with procedure BAP 1.10, "Control of GE Items, Materials and Activities Affected by FDDR and FDIs."
- b. Illinois Power (IP) evaluated the IP and BA programs for implementing FDDR and FDIs on GE equipment and determined that the deficiency resulted from the failure to post FDDR and FDIs in accordance with BAP 1.10. This was corrected through training of the document control personnel on posting of FDDRs and FDIs.
- c. Startup personnel were trained in the use of the Document Management System (DMS) computer program to verify identification of all outstanding changes to design drawings.

In addition, the BA corrective actions revised the following procedures to clarify document control requirements of FDDRs and FDIs:

BAP 2.6, "Instrumentation"

BAP 2.14, "Fabrication and Installation of Items, Systems and Components"

BAP 3.2.5, "Piping Component Supports"

The inspector has no further concerns.

4. Preoperational Test Procedure Review

The inspector reviewed the following test procedures for compliance with the FSAR, the SER, Regulatory Guide 1.68, and the Startup Manual and found them satisfactory except as noted:

PTP-HP-01, "High Pressure Core Spray"

PTP-DG/DO-03, "Diesel Generator IC"

PTP-HG-01, "Containment Combustible Gas Control"

PTP-HI-01, "Hydrogen Ignition System"

PTP-RP-01, "Reactor Protection System"

PTP-RI-01, "Reactor Core Isolation Cooling"

- a. During the review of PTP-RI-01, the inspector noted that the instructions for performing the test were not clear with respect to control of the sequence. Section 7.0, "Procedure," states that "Steps 7.1 through 7.4 can be performed in any sequence. Substeps

(e.g., 7.2.1) can also be performed in any sequence. Substeps can be performed concurrently, if practical." However, discussions with Startup also revealed that the program requires that test "steps" be performed in the sequence written. Deviation from this sequence requires a test exception. The confusion of sequence control exists in the definition of the terms "steps" and "substeps". In the test procedure, steps are the major sections (7.1) and substeps minor (7.1.1). However, the program defines steps as the actions within the major and minor sections (7.1.1.1).

The licensee has stated that clarification will be provided to the tests not yet released to assure sequence control. In addition to clarifying sequence definitions of non-released tests, administrative procedure SAP-11 should be upgraded to require in the Test Summary Report (TSR) a summary of the actual sequence in which the test was performed. This is important in that without this knowledge the reviewers will not be able to determine if a section or subsection of the test was nullified by performing a subsection or section out of sequence. This is considered an unresolved item (461/85036-01) in that sequence control needs clarification and that the actual sequence in which the test was performed should be in the TSR.

- b. Subsection 7.4.10 of PTP-RI-01 returns the motor operated valve (MOV) bypass switch 1E51A-S41 to test. Section 7.0 allows subsections of Sections 7.1 through 7.4 to be performed in any sequence. However, Subsection 7.4.10 cannot be performed before Subsections 7.4.8 or 7.4.9 in that the required test results will not be achieved. This, along with the failure to control testing sequence during preoperational test PTP-FC/SM-01, "Fuel Pool Cooling and Cleanup/Suppression Pool Makeup," as described in Paragraph 5.c of this report, is a violation of 10 CFR 50, Appendix B, Criterion V, and SAP-11 (461/85036-02) in that testing activities were not accomplished in accordance with an appropriate procedure (PTP-FC/SM-01) and that the implemented procedure (PTP-RI-01) was not appropriate to the circumstances.
- c. In addition to the examples above of inadequate sequence control, a partial review of preoperational procedure PTP-RH-01, "Residual Heat Removal," revealed that certain subsections noted a previous subsection for pump breaker position. The intent was to provide a reference to the test director to assure the correct lineup of the pump breaker if the test director took the allowed option of performing those subsections out of sequence. This is similar to PTP-RI-01 in that performing certain subsections out of sequence could prevent achieving the required test results, but the procedure did not contain a note to reference the lineup required to obtain the required results. In addition, reviewing the test director's log revealed that these subsections were performed in sequence and the required results were obtained. Since the test was performed in sequence and the test director log noted the actual sequence, this is not an example of the above identified violation; however, the potential did exist.

No violations, deviations, or unresolved items other than those discussed above were identified.

5. Preoperational Test Witnessing

The inspector witnessed the following preoperational testing to ascertain through observation and record review that testing was conducted in accordance with approved procedures and the requirements of the Startup Manual. The tests were found satisfactory unless otherwise noted:

- * PTP-HP-01, "High Pressure Core Spray"
- * PTP-LP-01, "Low Pressure Core Spray"
- * PTP-FC/SM-01, "Fuel Pool Cooling and Cleanup/Suppression Pool Makeup"
- PTP-RH-01, "Residual Heat Removal"
- PTP-NB-05, "Automatic Depressurization System"
- PPT-RP-01, "Reactor Protection System"

*Denotes detailed discussions in this paragraph.

a. PTP-LP-01, "Low Pressure Core Spray (LPCS) Preoperational Test"

The inspector witnessed the following sections of the above test, Sections 7.1, 7.2.1, 7.2.3, 7.2.4 and 7.2.6. This testing consisted of a verification of the control logic for the LPCS pump under simulated automatic and manual initiation; the valve control logic for the injection valve (1E21-F005), the full flow bypass valve (1E21-F012), and the suppression pool suction valve (1E21-F001); and the verification of Containment Level 1 isolation signal reset.

During the performance of the Containment Level 1 isolation signal reset the system failed to provide the expected results. The Shift Test Engineer (STE) generated a discrepancy as required by the Startup Manual and was proceeding to trouble-shoot the failure at the end of the shift. Otherwise, all remaining portions of the system tested worked as expected.

During the conduct of the test the inspector observed the STE directing an electrician in the replacement of a previously lifted lead. The STE would point to the appropriate terminals and verbally guide the electrician in landing the lead. In effect the electrician's actions were not independently verified by the STE. The STE then signed off the applicable step in the test procedure. When questioned by the inspector on why there was no independent sign-off on the restoration of the lifted lead the STE stated that his signature constituted the independent signature as allowed by the startup program. Subsequent discussions with the Director of Startup Testing indicate that it is Startup's position that what the inspector observed is a violation of the Startup Program. The program is currently setup to have the STE hand the restoration directions to the electrician, have the electrician perform the job, and then for the STE to independently verify the restoration. The

STE's signature then constitutes an independent verification of the work. The licensee indicated that training will be conducted to assure that STEs conduct independent verifications as required by the Startup Manual (SUM). This is considered by the inspector to be an isolated occurrence and not a violation because independent verifications have been observed during other preoperational testing. Additionally, the licensee has identified the STE's actions as a violation of the startup program and has taken corrective actions to prevent recurrence.

b. PTP-HP-01, "High Pressure Core Spray (HPCS) Preoperational Test"

The inspector witnessed portions of the following sections of the above test, Sections 7.2.4, 7.3.1, 7.3.2, 7.3.3, 7.3.4, 7.3.5, and 7.3.6. This testing consisted of a verification of manual initiation valve control logic; HPCS system initiation alarms for high drywell pressure and reactor vessel low water level; HPCS system initiation logic on high drywell pressure and reactor vessel low water level; manual HPCS initiation logic; and HPCS isolation logic on reactor vessel high water level.

During the performance of the manual initiation valve control logic, after being cycled several times, one of the "HPCS Test Return to the RCIS Storage Tank" isolation valve (1E22-F011) breakers tripped unexpectedly. The STE noted that a problem with the breaker for this valve as well as for the other "HPCS Test Return to the RCIC Storage Tank" isolation valve (1E22-F010) tripping had existed for some time. A request for assistance had been submitted to General Electric (GE) and an expedited disposition to increase the magnetic overload setting had been received and implemented. However, this resolution did not prevent recurrence of the problem since the breaker continues to trip. Otherwise, all remaining portions of the system tested, as listed above, appeared to work as expected. The inspector will continue to track the resolution of the breaker tripping problem with subsequent inspections of the startup program.

During the conduct of the test the inspector observed that the acceptance criterion for the time to rated flow and injection valve full open from the initiation signal was listed as 27 seconds. System design, as documented in the Final Safety Analysis Report (FSAR), is that the system can reach rated flow with the injection valve full open within 27 seconds of the initiation signal including the time for the power source availability. This is also consistent with the draft technical specifications. This preoperational test is performed with the system powered from the auxiliary power supply. However, under potential accident conditions the system may be powered from the diesel generators. The diesel generators at Clinton are currently allowed a maximum of 10 seconds to come up to speed and load the appropriate electrical busses after receipt of an initiation signal. Therefore, under the conditions where HPCS must be powered by the diesel generators the time for them to perform their intended function must be accounted for in

specifying test criterion when the test is not run using the diesel generators to power the system, i.e., the 27 seconds must be reduced by the time allowed for the diesel generators to perform their function (10 seconds).

This issue was discussed with the licensee who acknowledged that the appropriate acceptance criterion for this aspect of the test is 17 seconds instead of 27 seconds. They also noted that they had taken this into consideration on the other Emergency Core Cooling Systems (ECCS) but had missed it on HPCS. They further stated that a change would be made to the test procedure to correct this error. A subsequent review by the inspector indicated that for the Low Pressure Coolant Injection (LPCI) and Low Pressure Coolant Spray (LPCS) systems that the 10 second time for the diesel generators had been appropriately subtracted from the overall system response time. This is considered an open item (461/85036-03) until Test Change Notice (TCN) #2 is issued to resolve the acceptance criterion values in PTP-HP-01.

c. PTP-FC/SM-01, "Fuel Pool Cooling and Cleanup/Suppression Pool Makeup"

The inspector observed several portions of Section 7.5. One portion verified the flow path with the Residual Heat Removal (RHR) system in the Fuel Pool Cooling Assist Mode. The second portion involved demonstrating full flow capability with both system pumps running. The licensee had a previous problem with the pumps tripping on low pump suction head in this mode. During this test they were working with a suggested solution from Sargent and Lundy (S&L), the Architect/Engineer, to add water to the surge tanks after system startup to provide sufficient suction head for the pumps. This was accomplished during the full flow test and did prevent the pumps from tripping. However, at this time a problem exists with this solution in that when the system is shutdown, either normally or in the event of a pump trip, this excess water will cause the level to rise high enough in the lower pool to overflow into the ventilation ductwork surrounding the pool's periphery. During the portion of the test witnessed by the inspector the STE prevented this from happening by closing the manual isolation valve between the upper and lower pools, thus preventing the excess water from draining down to the lower pool. The inspector discussed this problem with the licensee and stated that if the final solution to the pump trip problem included having to add additional water to the system, they would have to demonstrate that on a pump trip the ventilation system for the lower pool would not be flooded. In any case, portions of this test will need to be reperformed upon completion of any system modification.

During the conduct of this test the inspector noted that the sequential order of the procedure was not being followed. When questioned by the inspector the STE explained that Startup Administrative Procedure (SAP)-11 allowed writing an Exception in this instance and that the Exception constituted a minor test

change requiring two signatures. However, the STE did not consider the action complete until the steps that had been skipped over were completed and did not believe that the second signature was required until that point. This therefore constituted a procedure change without the required level of review beyond the originators. The inspector indicated that Step 6.7.8 of SAP-11 requires the second verification signature prior to performing the testing out of sequence.

Subsequent discussions by the STE with the test organization supervisor resulted in writing a Condition Report (CR #1-85-08-045) stating that the SUM was violated. Immediate action was to stop the test and re-evaluate all exceptions involving out-of-sequence testing by a second qualified individual who signed each one off.

This is an additional example and part of the violation of 10 CFR 50, Appendix B, Criterion V, and SAP-11 (461/85036-02) described in Paragraph 4.b of this report in that testing activities were not accomplished in accordance with the approved procedure.

No violations, deviations, or unresolved items other than those discussed above were identified.

6. Preoperational Test Program Implementation Verification

The inspector verified the implementation of various aspects, as listed below, of the licensee's SUM to ensure that they were consistent with the written program and applicable regulatory requirements. Unless otherwise noted these aspects of the program appeared to be being implemented correctly.

a. Control of Temporary Alterations

The inspector observed that there appeared to be no formal program in place to ensure that the STE was aware of, and that testing was not invalidated as the result of, temporary alterations made by another STE authorized by the second STE's test procedure. As currently written, SAP-8 has an exception for following the temporary alteration program delineated therein (which requires the cognizant STE's signature) if the temporary alteration is initiated by and restored by an approved test procedure incorporating independent verification of the restoration. Under this program an STE can make a change to another STE's system without his knowledge or authorization and thus potentially invalidate the testing being performed by the second STE. Discussions with several STEs indicate that they have had problems with other STEs altering their systems such that when they go to try to test a portion of their system it does not function correctly.

This is considered to be an unresolved item (461/85036-04) until a formal program is implemented to ensure that testing, modifications and maintenance of related systems are controlled such that the related system testing is not violated.

b. Jurisdictional/Status Tagging

During a tour of the Control Room the inspector observed that there did not appear to be any jurisdictional tags hung on any of the equipment therein. The licensee uses orange tags to indicate that the item is under the control of the Startup Organization and blue tags to indicate that the item is under the control of the Operations Organization. Conversations with various personnel in the Control Room (operators, STEs, Quality Assurance) indicated that everything within the Control Room was considered as turned over to Startup but nobody seemed sure if there was an orange tag or tags hung anywhere to indicate this.

Subsequent conversations with the Startup Organization indicated that an orange tag was hung on the Control Room door stating that everything therein was turned over to Startup. However, when the inspector attempted to confirm this, no tag could be located but there was an orange sticker stuck on the door stating, "Turned Over to Illinois Power For Testing." Whether or not this was for the entire Control Room or just the door was not clear. The Startup Organization has hung orange jurisdictional tags on each panel module (approximately 25) within the Control Room prior to completion of the inspection that state that the panel module is turned over to Startup for testing.

The inspector also observed that there were no blue tags hung to indicate what controls/instrumentation had been turned over from Startup to the Operations Organization even though some had been turned over. Thus, since the blue jurisdictional tags are not being used in the Control Room and the orange tags recently hung do not distinguish what specific portions of the panel module are under Startup control, there is no readily available way to determine who has control of the various controls/instrumentation.

In addition to the above observations, the inspector observed that excessive maintenance and modifications are being performed on panels under IPSU jurisdictional control; such as, landing leads under a construction work request (CWR) on a IPSU jurisdictional panel for a fire protection field change request. Since the panel was point-to-point inspected prior to IPSU accepting jurisdictional control and the construction work will only receive inspection of the work requested by the CWR, the inspector is concerned that if an error was made with leads not documented in the CWR, the error will go undetected. The test program does not address point-to-point inspection of panels or portions of panels where IPSU has jurisdictional control and activities may have disturbed the

previously inspected or tested configuration outside of the documented work activity. This is an open item (461/85036-05) until the inspector can fully evaluate the jurisdictional program.

c. Training

The inspector verified by interview and review of records for two startup test personnel, that they had received the required training. This training included administrative controls and quality control requirements for testing.

No violations, deviations, or unresolved items other than those discussed above were identified.

7. Open Items

Open items are matters which have been discussed with the licensee, which will be reviewed further by the inspector, and which involve some action on the part of the NRC or licensee or both. Open items disclosed during the inspection are discussed in Paragraphs 5.b and 6.b.

8. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, items of violation, or deviations. Unresolved items disclosed during the inspection are discussed in Paragraphs 4.a and 6.a.

9. Exit Interview

The inspector met with licensee representatives (denoted in Paragraph 1) August 20, 1985. The inspector summarized the scope and findings of the inspection. The inspector also discussed the likely informational content of the inspection report with regard to documents or processes reviewed by the inspector during the inspection. The licensee did not identify any such documents/processes as proprietary. The licensee acknowledged the statements made by the inspector with respect to the findings.