

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-315/85041(DRP); 50-316/85041(DRP)

Docket Nos. 50-315; 50-316

Licenses No. DPR-58; DPR-74

Licensee: American Electric Power Service Corporation  
Indiana and Michigan Electric Company  
1 Riverside Plaza  
Columbus, OH 43216

Facility Name: Donald C. Cook Nuclear Power Plant, Units 1 and 2

Inspection At: Donald C. Cook Site, Bridgman, MI

Inspection Conducted: December 10, 1985 through January 20, 1986

Inspectors: B. L. Jorgensen

J. K. Heller

C. L. Wolfson

E. R. Swanson

C. D. Anderson

Approved By: *CW Hehl*  
C. W. Hehl, Chief  
Projects Section 2A

2-11-86  
Date

Inspection Summary

Inspection on December 10, 1985 through January 20, 1986 (Reports No. 50-315/85041(DRP); 50-316/85041(DRP))

Areas Inspected: Routine, unannounced inspection by the resident inspectors of licensee actions on previously identified items; operational safety verification; reactor trip/safety system challenge review; surveillance; maintenance; reportable events; and 10 CFR 21 reports. The inspection involved a total of 210 inspector-hours by five NRC inspectors including 21 inspector-hours during off-shift.

Results: Of the seven areas inspected, no violations or deviations were identified in six areas. Two violations (Level V - heavy load not properly controlled, Paragraph 6; Level IV - lack of appropriate controls for activities affecting safety equipment, Paragraph 6) were identified in the remaining area.

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## DETAILS

### 1. Persons Contacted

- W. G. Smith, Jr., Plant Manager
- \*B. Svensson, Assistant Plant Manager
- \*A. Blind, Assistant Plant Manager
- \*T. Kriesel, Technical Superintendent-Physical Sciences
- J. Allard, Maintenance Superintendent
- \*K. Baker, Operations Superintendent
- \*J. Stietzel, Quality Control Superintendent
- \*T. Bielman, Planning Supervisor
- \*L. Gibson, Technical Superintendent-Engineering
- J. Sampson, Operations-Production Supervisor
- \*D. Wizner, Maintenance-Production Controller
- M. Horvath, Quality Assurance Supervisor
- \*D. McAlhany, Quality Assurance (AEPSC)
- \*T. Adams, I&M Construction
- \*R. Allen, Planning

The inspector also contacted a number of other licensee and contract employees and informally interviewed operations, maintenance, and technical personnel.

\*Denotes personnel attending exit interview January 22, 1986.

### 2. Licensee Actions on Previously Identified Item

- a. (Closed) Open Item (315/81018-03; 316/82021-04): this item, identified by the resident inspector office, was subsequently independently identified by a NRC Region III technical specialist, who assigned another tracking number (315/85025-02). The technical issue involves acceptability of isolating certain containment pressure instrumentation during periodic integrated leakrate testing. That issue has not been closed, but it will henceforth be tracked via the technical specialist(s) using the new number.
- b. (Closed) Violation (315/82010-02; 316/82010-03): failure to provide adequate administrative control for planning and controlling the scope of "troubleshooting" type maintenance. Corrective action involved revision of the controlling procedure, PMI-2290. Subsequently, followup was documented (IE Report No. 315/82022; 316/82022) leaving "open" controls to include specific procedures for job accomplishment including retest. A similar issue was identified later and another tracking number (315/83001-07; 316/8300-07) was assigned. That item is discussed below.
- c. (Closed) Unresolved Item (315/83001-06; 316/83001-06): this pair of items involved a weakness in procedure PMI-2290 "Job Orders", Revision 4, with respect to the determination of how equipment is to be restored operable and how appropriate quality control functions (i.e. "hold points") are to be incorporated when work is done without written procedures. Revision 5 to PMI-2290 specifies



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responsibility at step 4.2.3 for determination by the Department Head responsible for the Job Order, in co-operation with other Departments, of required post-maintenance testing or inspections. Performance, documentation and evaluation of test results are covered by Section 4.4. Incorporation of quality control checks remains unsystematized (but with decisional discretion by the QC Department) unless procedures are used, in which case the QC Department has already made its determinations involving "hold points" and has inserted them where deemed necessary.

- d. (Closed) Unresolved Item (315/83001-07; 316/83001-07): this pair of items involved a weakness in PMI-2290, Revision 4 concerning not providing criteria and defining responsibility for determining when written procedures are required in performing maintenance. Revision 5 to PMI-2290 specifies (at Step 3.3.4) determination by the Department assigned the work, of the appropriate procedures to be performed. For Technical Specification, safety related and safety interface items, the procedures are evaluated against an attachment (Form PMI-2290-3) for specified attributes, and either the Form, procedure(s), or both are used as necessary to assure every attribute is addressed.
- e. (Closed) Violation (316/83004-05): the licensee permitted inspection of an activity (valve maintenance) by the involved direct supervisor, rather than performing an independent inspection, and the inspection failed to verify conformance to requirements in that a loose part inside the valve body was not detected. Controls for post-maintenance testing established in Revision 5 to PMI-2290 "Job Orders" include prior determination among all Departments of the inspection(s) required, and performance, documentation and evaluation thereof. Inspection by the direct supervision is prohibited, as stated in the licensee's letter (AEP:NRC:0831) dated August 24, 1983.
- f. (Closed) Violation (316/83004-06): the licensee performed a repair without the required procedure present or correctly implemented and with no procedure prepared or used for the cleanliness inspection following repair. Revision 5 to PMI-2290 "Job Orders" (as discussed for items 315/83001-07; 316/83001-07 above) now contains controls for determining which procedures must be utilized. Absence of a required procedure from the job site has not recurred.
- g. (Closed) Violation (315/83012-02; 316/83013-01): the licensee failed to submit a required Quality Assurance Program description on time and no time extension was requested. The licensee subsequently (transmittal AEP:NRC:0847A dated October 3, 1983) provided the program description required, along with a listing of those sections changed from the previous description. Independent verification of corrective action is documented in QC Surveillance Report QCAEP-85-0769 dated June 21, 1985. NRC technical review of the submittal, and exchanges of correspondence with the licensee, have continued.

- h. (Closed) Open Item (315/83013-01): the inservice inspection procedures did not reflect licensee reorganization and reassignment of responsibilities. Procedure PMI-5070 "Inservice Inspection" Revision 6 was modified by Change Sheet 3 dated December 27, 1984 to address the basis for this item.
- i. (Closed) Unresolved Item (315/84006-01; 316/84006-02): the licensee had retyped Control and Instrument procedures into a word processor based system, to facilitate future revision and incorporate numerous existing "Change Sheets". No technical review was performed to assure the integration and retyping process itself did not introduce unintended changes or errors into the procedure. The NRC subsequently found a number of errors apparently had been made, which the licensee corrected in an unauthorized manner, i.e. unreviewed pen/ink changes. This finding is assigned its own item number (315/85028-03; 316/85028-03) and remains "open". See Paragraphs 2.1 and 5 below for additional discussion.
- j. (Closed) Violation (315/84006-02; 316/84006-03): improper "temporary changes" were made to a surveillance test procedure in that the intent of the procedure was altered by omission of 3 of 13 functions intended to be tested. The licensee's response (letter AEP:NRC:0891 dated June 22, 1984), supplemented by independent verification and a fuller description of corrective action in Quality Control Surveillance Reports No. QCMG-84-1041 dated July 5, 1984 and No. QCMG-84-1099 dated July 26, 1984 establish satisfactory action for this item.
- k. (Closed) Violation (315/85014-02): failure to verify primary coolant system flowrate greater than 3000 gpm before and during a reduction in system boron concentration. The licensee's response (letter AEP:NRC:0939 dated July 5, 1985) supplemented by independent verification documentation concerning corrective action in Quality Control Surveillance Report No. QCO-85-1042 dated July 30, 1985 establish satisfactory action for this item.
- l. (Open) Unresolved Item (315/85028-03; 316/85028-03): apparent failure to perform proper review and approval of procedure changes. As described in Paragraph 5 below, the licensee has engaged in an extensive review of procedures of the subject type; one purpose of which is to determine the correctness of existing pen-and-ink changes. NRC has witnessed examples of this effort in the field, but a systematic verification of licensee action remains to be done.
- m. (Open) Part 21 Report (315/86002-PP; 316/86002-PP): the licensee was informed by NRC Region III in late December 1985, of a Part 21 letter from Commonwealth Edison regarding inadequate documentation of the qualification of internal wiring to the torque switches and limit switches on certain Limatorque brand motor operators.

Initial inspection of the Limatorque motor operator wiring and documentation suggested that the licensee had replaced the internal wiring with their own wiring that is qualified for valves that must operate in a harsh environment. Final evaluation by the licensee

has not been completed. I.E. Information Notice No. 86-03 "Potential Deficiencies in Environmental Qualification of Limitorque Motor Valve Operator Wiring" was issued on January 14, 1986 to formally alert licensees of this potential generic problem.

No violations or deviations were identified.

### 3. Operational Safety Verification

The inspector observed control room operation including manning, shift turnover, approved procedures and Limiting Condition for Operation (LCO) adherence, and reviewed applicable logs and conducted discussions with control room operators during the inspection period. Observations of the control room monitors, indicators, and recorders were made to verify the operability of emergency systems, radiation monitoring systems, and nuclear and reactor protection systems, as applicable. Reviews of surveillance, equipment condition, and tagout logs were conducted. Proper return to service of selected components was verified. Tours of the auxiliary building, turbine building, and screenhouse were made to observe accessible equipment conditions, including fluid leaks, potential fire hazards, and control of activities in progress.

Unit 1 ended an extended (8 month) refueling/maintenance/ISI outage, entering Mode 1 on December 14, 1985 and operating at approximately 90% power throughout the inspection period, with one exception. A power reduction to 20% to repair secondary system steam leaks was commenced on December 23, 1985. Feedwater heater 5B steam side has been isolated due to a packing leak. This packing leak will be repaired during the next outage.

During a tour of the Unit 1 main control room on December 17, 1985 the inspector observed operator response to an apparent failure of the radiation monitoring system circuits associated with channels ERS-1300 and VRS-1500. Though the operators were able (in about an hour) to diagnose and correct a breaker misalignment which caused this problem, and no Technical Specifications were violated, there was a degree of unfamiliarity with the equipment displayed which led the inspector to further review in this area. This review indicated the operators have been briefed concerning the (relatively new) control console, but that decisions had not been made concerning the extent of operator responsibility in responding to alarms, troubleshooting, adjusting, or otherwise manipulating the controls. An extant alarm response procedure addressed a previous version of the controls. On discussion of this matter with licensee management, he indicated the equipment was generally considered to be in the custody of the radiation protection group, which has procedures for their interaction with it. The licensee agreed, however, to specifically determine what interaction with this equipment applied to operators, and to prepare appropriate current procedures for the purpose. These decisions had been made, the outdated procedure cancelled, and a new revision was in typing at the conclusion of the inspection. Pending completion of licensee action in this area, this is considered an Open Item. (Open Item 315/85041-01; 316/85041-01).



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Unit 2 operated at 80% power during this inspection period. The inspector performed a review of accessible portions of the Unit 2 Chemical and Volume Control System (CVCS) using licensee drawing OP-2-5129-10 to verify that correct flowpath and valve positions were maintained, and no condition existed that degraded the system or components.

During a tour of the Unit 2 main control room on December 17, 1985 the inspector found the Turbine Driven Auxiliary Feedwater Pump (TDAFP) speed controller at a setting of 20 percent (indicating the governor valve would open no further than 80 percent) which appeared inconsistent with previously observed settings and with the Unit 1 TDAFP setting. Licensee investigation immediately ascertained a conflict existed between normal operating procedures, which specified leaving the setting at 10 percent after each pump run, and surveillance testing procedures, which periodically determine (by evaluation of pump speed and flow) what the "correct" setting should be. Although pump speed settings are not addressed in Technical Specifications, and Safety Analyses have been performed which take no credit for any TDAFP flow until operator action after 10 minutes post-accident, the licensee agreed to improve the degree of equipment control for these pumps and to eliminate confusing or contradictory instructions. A Condition Report was written to document the finding of the control positioned differently from the normal procedure, and another addressed the conflict between the surveillance and operating procedures. Licensee safety evaluation has determined that a speed controller setting of 20 percent does not affect operability of the pump.

Under the licensee's Regulatory Performance Improvement Program (RPIP), as identified in his letter AEP:NRC:0625F of February 23, 1984, a program for addressing some 155 "problem" alarms was implemented. Action to resolve each was to be completed subsequent to startup after the Unit 1, 1985 refueling outage. As noted above, Unit 1 started up during this inspection period. Of the 155 "problem" alarms identified in the RPIP for Unit 1, action was implemented on all items. Of these, 149 items appear permanently resolved. The licensee is continuing to pursue elimination of the remaining items and has, beyond the scope of the RPIP, identified and addressed over 70 additional "problem" alarms - with the goal of eventually eliminating all of them.

No violations or deviations were identified.

#### 4. Reactor Trips - Safety System Challenge Review

The following events were reviewed by the resident inspectors to determine: the significance of the event; the performance of safety systems; immediate actions taken by the licensee; radiological consequences; and corrective actions taken.

At 1:05 p.m. on December 13, 1985 Unit 1 experienced isolation of all four main steam line isolation valves while in Mode 3 (no significant steam flow). It resulted from conduct of an instrument surveillance test with average coolant temperature below 540-degrees Fahrenheit. The test is permitted under these conditions. When the isolation did occur,



however, the operators considered it "unexpected" (i.e. not part of a preplanned procedure) since they were not first notified, per procedure. They therefore applied 10 CFR 50.72 as requiring a report. Systems were returned to their original configuration, the testing was completed, and start-up of the Unit proceeded.

No violations or deviations were identified.

## 5. Surveillance

The inspector reviewed Technical Specifications required surveillance testing as described below and verified that testing was performed in accordance with adequate procedures, that test instrumentation was calibrated, that limiting conditions for operation were met, that removal and restoration of the affected components were properly accomplished, that test results conformed with Technical Specifications and procedure requirements and were reviewed by personnel other than the individual directing the test, and that deficiencies identified during the testing were properly reviewed and resolved by appropriate management personnel.

Performance of all or parts of the following tests was observed:

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| **1 THP 4030 STP.023 | Source Range Nuclear Instrumentation Protection Set I (N-31) Surveillance Test.      |
| **1 THP STP.114      | Reactor Vessel Level Instrumentation System (RVLIS) Calibration Procedure (Train B). |
| **2 THP 4030 STP.106 | Overtemperature and Overpower Protection Set III Surveillance Test (Monthly).        |

During performance of the first test listed above (STP.023) questions arose in two areas. The first concerned a prerequisite that the plant be "at least hot shutdown", because at the time of the test, the plant was heating up but had not reached hot shutdown. A review of the context and bases for the test soon established the test was not to be performed above hot shutdown. The second question concerned wording in the procedure regarding an adjustment amounting to one-half decade, also referred to a factor of three. ((The instruments are logarithmic)). A procedure change sheet was processed to clarify the intent on this item.

Part of the review for the final item above (STP.106) involved verification the procedure in use had been properly reviewed and approved. The procedure in question was one which had pen-and-ink changes to correct apparent typographical errors. A properly reviewed and approved change sheet dated September 3, 1985 had been processed to document these changes were correct. This review apparently took place after the pen-and-ink corrections, as part of the licensee's corrective action for examples identified in an earlier NRC inspection (315/85028; 316/85028) where such changes had not received required review and approval. Licensee personnel indicated such a review had been performed on many, many procedures, as noted above at Paragraph 2.1.

No violations or deviations were identified.

6. Maintenance

Station maintenance activities of safety related systems and components listed below were observed and/or reviewed to ascertain that they were conducted in accordance with approved procedures, regulatory guides and industry codes or standards and in conformance with Technical Specifications.

The following items were considered during this review: the limiting conditions for operation were met while components or systems were removed from service; approvals were obtained prior to initiating the work; and activities were accomplished using approved procedures.

The following maintenance activities were observed or reviewed:

JO 97775 Installation/prefabrication of baffle for the Spent Fuel Pit exhaust unit (12-HV-AFX).

RFC-DC-12-2457 Install I/I repeater in containment high radiation circuit to TSC.

JO 46444 Clean and inspect 4KV breaker T21D3 to "E" CCW  
(File No. EE-SG-HKVBUS) pump using procedure 2-MHP 5021.082.001 Rev. 3 PCS-1.

JO 46445 Clean and inspect 4KV breaker T21D10 to "E" ESW  
(File No. EE-SG-HKVBUS) pump using procedure 2-MHP 5021.082.001 Rev. 3 PSC-1.

Transfer of radwaste to track alley.

During a tour of the auxiliary building spent fuel pool area, at approximately 11:00 a.m. on December 13, 1985, the inspector observed the movement of a metal waste bin across the area, utilizing the building crane. At the time, a large scaffold (adjacent to the Unit 2 containment air lock shield blocks) narrowed the access way for suspended load movement. The bin was transferred above an area immediately adjacent to the fuel pool, outside the safe load zone designated by color coding of the floor in the area. After movement of the waste bin, the inspector asked the crane operator the weight of the waste bin. The crane operator was not aware of its weight. This was discussed with plant management. Further review showed that licensee procedure 12 MHP 5021.001.036, implements the requirements of Technical Specification 3.9.7 (for each Unit) involving control of heavy loads in the spent fuel pool area, by specifying loads prohibited from travel other than above color coded safe load zones. The two ton metal waste bin is a load restricted by the referenced procedure to the safe load zones. Failure to restrict this load (while suspended from the crane) is considered a violation of the referenced Technical Specification (Violation 315/85041-02; 316/85041-02).



The licensee has imposed a freeze (still in effect as of January 22, 1986) on crane movement of the waste container. The licensee indicated that additional weaknesses were identified during review of this problem. These will be addressed for corrective action as well.

The inspector observed that scaffold was constructed over both trains of essential service water valves (a seismically qualified safety related system) to the containment spray heat exchangers. The scaffolding was constructed to facilitate work in the area. At the time the scaffold was constructed, it was estimated the work would be completed and the scaffold disassembled by December 12, 1985. The status of the plant (Unit 1) was apparently not a factor considered in the timing or physical parameters for this scaffold. By December 13, 1986 the Unit had commenced startup and had achieved Mode 3 while the scaffold remained in place. The valves 1-WMO-711 (Train A) and 1-WMO-715 (Train B) were both immediately below the scaffold, in such a position as to be at risk in the event of scaffold failure (such as from seismic effects). Both trains of essential service water are required operable in Modes 1, 2, 3, and 4.

This matter was brought to the attention of licensee management, who agreed steps were needed to assure the status of safety systems was not jeopardized by the relatively large number of construction activities ongoing in both of the operating Units. All scaffold construction was suspended, the subject scaffold was dismantled, and the licensee established a working group to develop criteria for future scaffold erection. The Planning, Operations and Construction organizations each had representation on the working group. Following about two weeks, the suspension was lifted under interim controls involving pre-erection and post-erection reviews and approvals by the working group, to assure no safety equipment jeopardy. Further, a number of other criteria were implemented, well beyond the scope of the original concern identified by the inspector. The purpose of the working group was ultimately to produce a Plant Manager's Standing Order (PMSO) to control scaffold installation for the long term.

Licensee investigation of this issue also disclosed a Condition Report (01-01-85-175) was written in January 1985 addressing the same concern, i.e. unsecured scaffolding was in place in a safety related pump room while the pump was considered "operable". The Corporate office was requested to address this issue in an October, 1985 letter from the plant, but as of the time of this inspection, no response had been received.

Technical Specifications, at Section 6.8.1.a for both Units, require procedures be established and implemented covering the activities recommended in Appendix "A" of Regulatory Guide 1.33; which includes procedures, instructions or drawings appropriate to the circumstances for maintenance which can affect the performance of safety related equipment. Failure to establish procedures or instructions appropriate to assure safety related equipment would not be affected by ongoing scaffold construction, as described above, is considered a violation of the referenced Technical Specification (Violation 315/85041-03; 316/85041-03).

Two violations and no deviations were identified.

7. Reportable Events

Through direct observation, discussions with licensee personnel, and review of records, the following Licensee Event Report (LERs) were reviewed. The review addressed compliance to reporting requirements and, as applicable, accomplishment of immediate corrective action. If indicated "closed", the review showed appropriate corrective action to prevent recurrence had been accomplished in accordance with applicable requirements.

(Closed) LER 316/82003-01T: West containment spray pump suction pipe weld failure. As described in the licensee's Supplement to this report, the analysis of a boat sample concluded the failure was primarily due to residual stress. A design change was initiated to replace the associated strainer housings in both Units. This replacement has been completed in Unit 1 and is scheduled for the February 1986 Unit 2 outage.

8. 10 CFR Part 21 Report

During this inspection period, the licensee initiated a Part 21 report regarding the identification of incomplete flux coating on welding electrodes used at D. C. Cook Unit 1. The inspectors discussed the Part 21 report with licensee personnel, performed a visual inspection of samples of the faulty weld rods, and provided backup material to the NRC Headquarters Vendor Inspection Branch.

9. 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. An Open Item disclosed during the inspection was discussed in Paragraph 3.

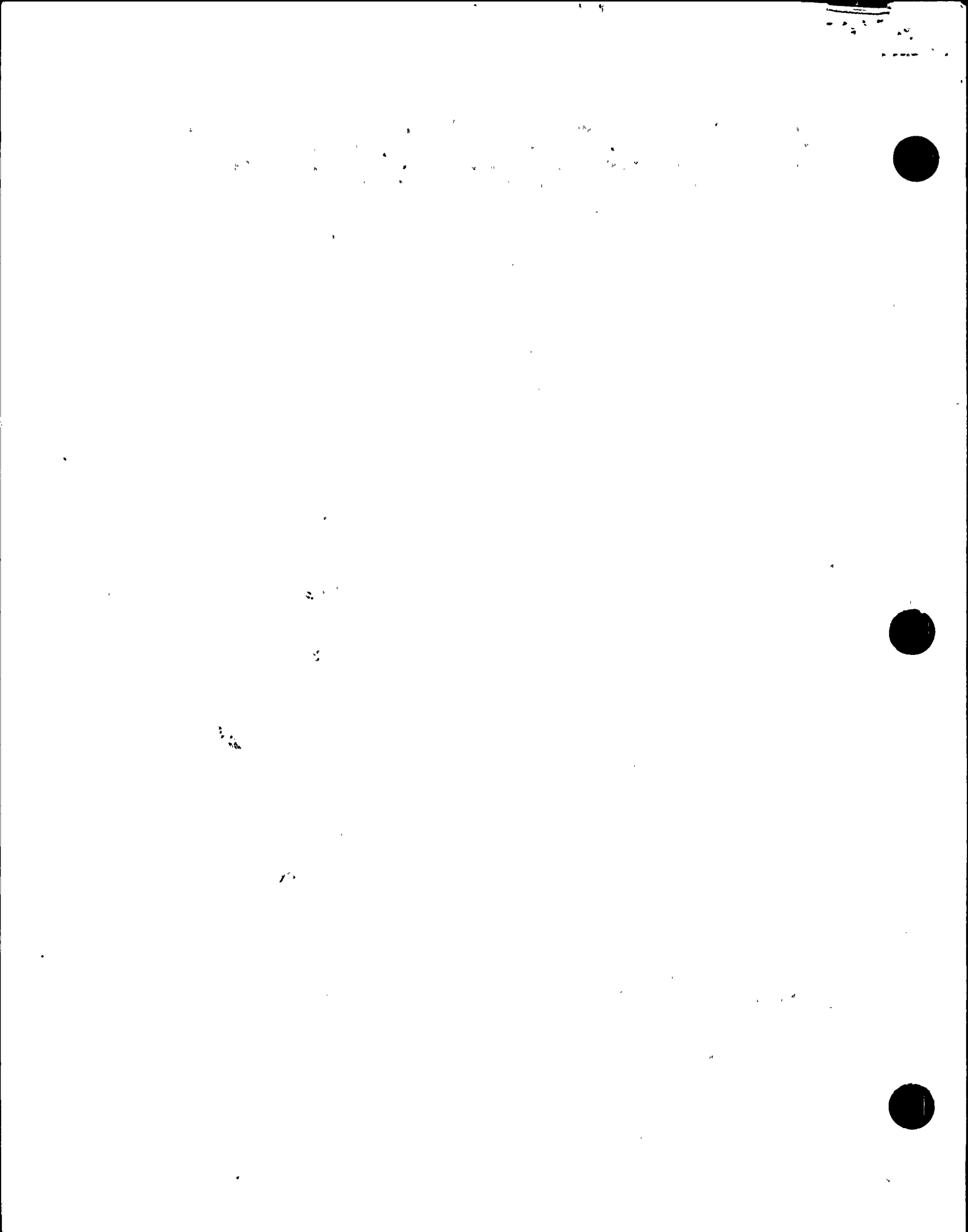
10. Management Interview

The inspector met with the licensee representatives (denoted in Paragraph 1.a above) following completion of the inspection on January 22, 1986. The inspector summarized the scope and findings of the inspection as described in these Details.

- a. The two apparent violations were specifically discussed. The licensee reiterated that in each case, activities of the type which led to the identified problems had been "frozen" and, in the case of heavy load control, remained so (Paragraph 6).
- b. The need to improve the degree or specificity of controls for operating the Eberline RMS panel and the auxiliary feedwater pump speed settings were both discussed. The licensee agreed in both cases and had actions underway to address inspector concerns (Paragraph 2).

The inspector also discussed the likely informational content of the report with respect to documents or processes reviewed. The licensee was afforded the opportunity to identify any such documents/processes which might be proprietary, and none were so designated.





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