

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-315/85014(DRP); 50-316/85014(DRP)

Docket Nos. 50-315; 50-316

Licenses No. DPR-58; DPR-74

Licensee: American Electric Power Service Corporation  
Indiana and Michigan Electric Company  
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: April 23, 1985 through May 20, 1985

Inspectors: B. L. Jorgensen

J. K. Heller

C. L. Wolfson

Approved By: *G. C. Wright*  
G. C. Wright, Chief  
Reactor Projects Section 2A

6/6/85  
Date

Inspection Summary

Inspection on April 23, 1985 through May 20, 1985 (Reports No. 50-315/85014(DRP) 50-316/85014(DRP))

Areas Inspected: Routine unannounced inspection by the resident inspectors of licensee actions on previous inspection findings; operational safety; maintenance; surveillance; and independent inspection areas. The inspection involved a total of 259 inspector-hours by three NRC inspectors including 36 inspector-hours off-shift.

Results: Of the five areas inspected, no violations or deviations were identified in three areas; three violations were identified in the remaining two areas (improper storage of flammable liquids, and failure to document reactor coolant flow during reactor coolant boron reduction - Paragraph 3, failure to follow battery surveillance procedure - Paragraph 5).

8506240659 850606  
PDR ADDCK 05000315  
G PDR



## DETAILS

### 1. Persons Contacted

- \*W. G. Smith, Jr., Plant Manager
- \*B. Svensson, Assistant Plant Manager
  - T. Kriesel, Technical Superintendent-Physical Science
  - A. Blind, Assistant Plant Manager
  - K. Baker, Operation's Superintendent
- \*J. Stietzel, Quality Control Superintendent
  - T. Beilman, Quality Assurance Superintendent
  - J. Allard, Maintenance Superintendent
  - R. Tella, Maintenance Engineer
  - T. Kossack, Performance Engineer
  - W. Tjader, Maintenance Foreman
  - A. Guzicki, Shift Supervisor
  - L. Boone, Shift Supervisor
  - L. Smith, Shift Supervisor
- \*L. Gibson, Technical Superintendent-Performance
- \*K. Murphy, Production Supervisor

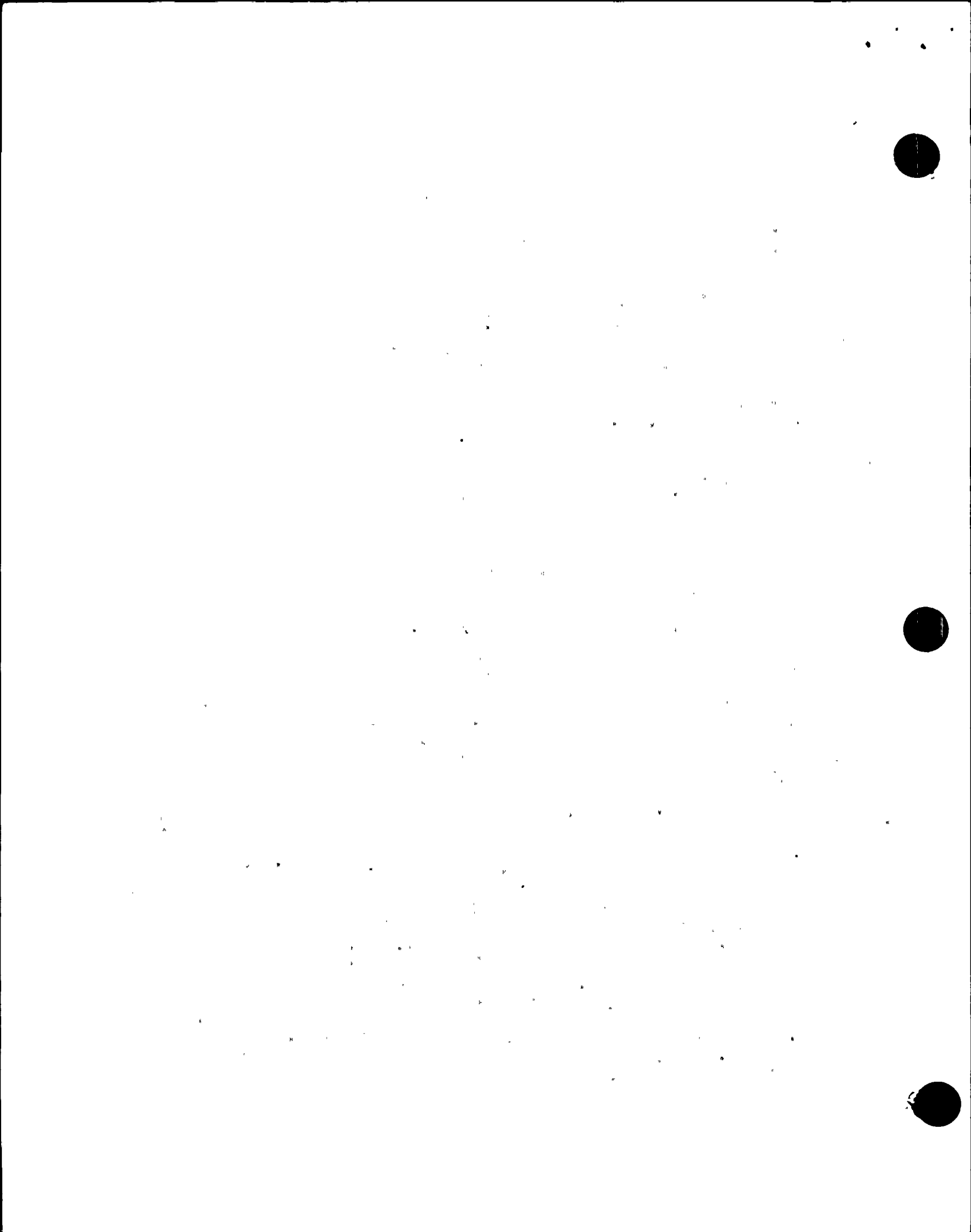
The inspector also contacted a number of licensee and contract employees and informally interviewed operation, technical and maintenance personnel during this period.

\*Denotes personnel attending exit interview on May 23, 1985.

### 2. Licensee Actions on Previously Identified Items

(Closed) Unresolved Item (316/78-33-01): The inspectors were unable to determine whether each heat trace channel for boron injection path was being energized at least each 31 days as required by Unit 2 Technical Specification 4.5.4.2.a. The Unit 1 specification is the same. Review in 1984 indicated that both requirements are implemented by performance of Procedure 12 OHP 4030 STP.023, which specifies alternation of energized channels on the twelfth day of each month, and includes appropriate documentation and review/signoff requirements.

(Closed) Open Inspection Items (315/80-20-05 and 316/80-16-03): Policies and procedures on equipment return-to-service needed enhancement to assure appropriate post-maintenance testing and verification of "operability". This problem was identified in review of an LER wherein an RHR pump was not tested following maintenance on an associated heat exchanger and was found airbound about three weeks later during routine surveillance testing. Plant Manager's Instructions PMI-2110 "Clearance Permit System" now specifies all Technical Specification equipment shall have operability verification performed by the Operation's Department. An SRO license holder determines restoration requirements, and is instructed by PMI-2110 to consider not just the valves, breakers or switches originally tagged, but all those necessary to "re-establish the operability of the system or component". Restoration not involving clearance permits remains open under the item discussed below.



(Open) Unresolved Item (315/83-01-06 and 316/83-01-06; 315/83-01-07 and 316/83-01-07): The first pair of items involves weakness in PMI-2290, "Job Orders", 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; the second pair of items involves a PMI-2290 weakness in not providing criteria and defining responsibility for determining when written procedures are required. The subject PMI remains unchanged. Under the licensee's Regulatory Performance Improvement Program (RPIP), a revision is in progress, but its completion is not anticipated until September 1, 1985. The specifics of the identified concerns relating to PMI-2290 were discussed with licensee personnel involved in the revision process (which is already overdue against the licensee's original RPIP schedule) who felt the concerns were being addressed in the revision being considered. The items remain open pending NRC review of the approved revised procedure.

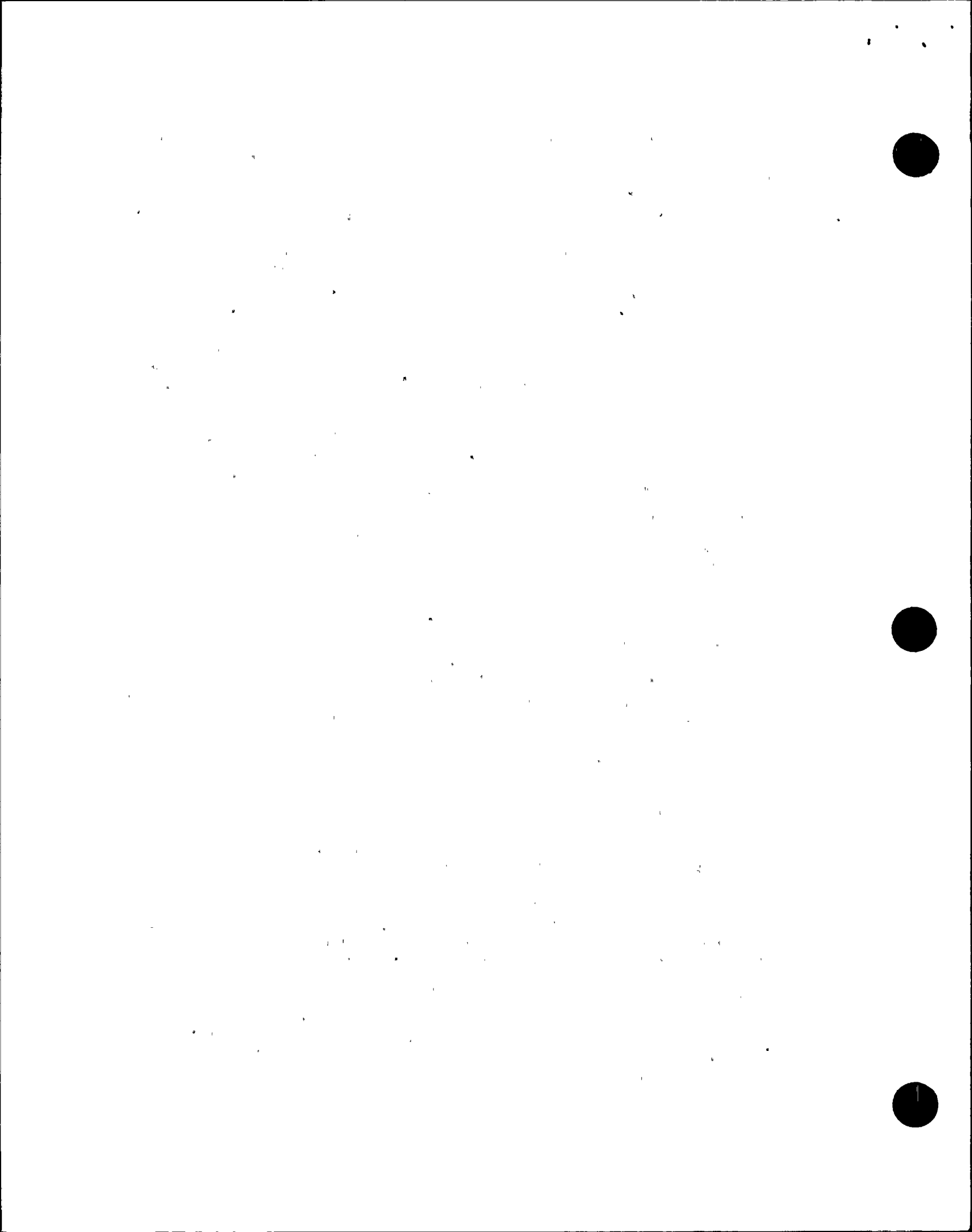
(Open) Noncompliance (315/81-11-06A and B, and 316/81-14-06A and B): Fire resistance ratings of certain doors could not be determined. At the request of a Region III Specialist the following were verified to be UL certified doors: No.'s 323, 339, 325, 326, 324, 341, 373, 374, 385, 386, 388, 226, 227, 228, and 229. This information was provided to the Region III Specialist with the expectation that this item will be closed in a subsequent inspection report.

(Closed) Unresolved Item (315/85009-02; 316/85009-01): The weekly/quarterly surveillance procedure for the 250 volt station batteries did not implement a Technical Specification requirement that the electrolyte level be maintained between the minimum and maximum level marks on the cells. The current revision to the Surveillance Procedure requires level be maintained between these marks. From the time the problem was identified until the appropriate procedures were revised, the requirement to maintain the electrolyte level between the marks was verified on the work orders implementing these surveillances.

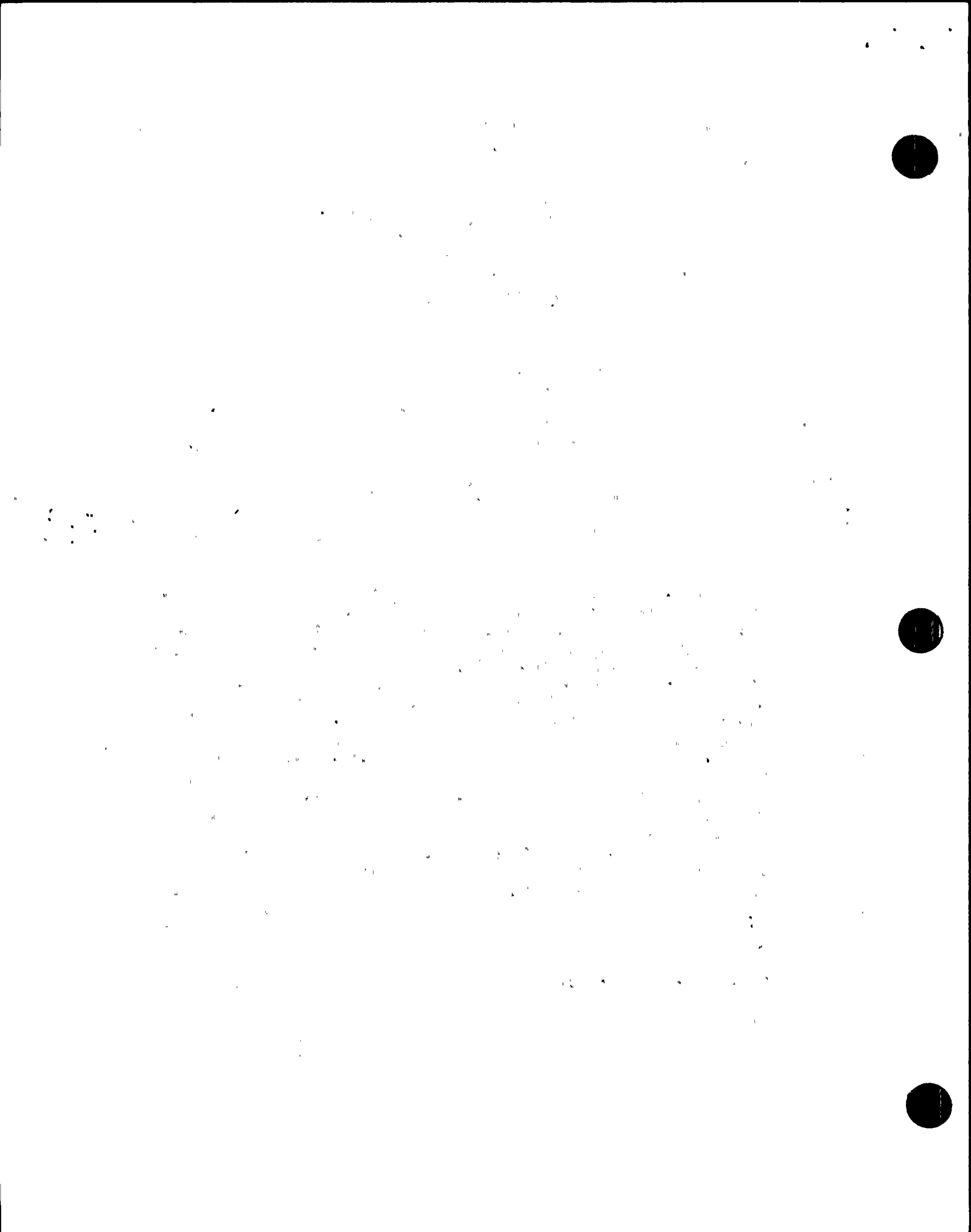
No violations or deviations were identified.

### 3. Operational Safety Verification

- a. The inspector observed control room operation including manning, shift turnover, approved procedures and LCO adherence; and reviewed applicable logs and conducted discussions with control room operators during the inspection period of April 23, through May 20, 1985. 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. Reviews of surveillance, equipment condition, and tagout logs were conducted. Proper return to service of selected components was verified. Tours of the auxiliary building, Unit 1 containment, and screenhouse were made to observe accessible equipment conditions, including fluid leaks, potential fire hazards, and control of activities in progress.



- b. By observation and direct interview it was verified that the physical security plan was being implemented in accordance with the station security plan.
- c. During a tour of the Unit 1 upper containment (top and intermediate catwalks) the inspector found coating delamination ranging in size from approximately one square inch to six square feet. When discussed with site management the inspector was informed that a program was planned to recoat selected areas in the containment. The inspector reviewed the coating repair program and found these areas and many more were identified.
- d. During a tour of the Auxiliary Feedwater pump rooms the inspector found the retracting mechanism for Fire Doors Nos. 226, 227, 228, and 229 were loose or some of the screws securing the retracting mechanism were loose. This was identified to the Fire Protection Coordinator. This was also discussed at the exit interview at which time plant management identified a generic review was being performed.
- e. During a tour of the Unit 1 upper containment prior to fuel transfer the inspector observed some foreign material on the overhead crane rails. This was identified to the accountability inspector stationed at the access to the refueling area. A subsequent inspection verified that the material was removed.
- f. During a tour of the 633 foot level of auxiliary building on May 15, 1985, at approximately 1300 hours, the inspector found three UL/FM approved Flammable Liquid Storage cabinets located near the Unit 1 auxiliary building control panel. Stored in one cabinet were paint cans with the lids removed. Stored in another cabinet were a couple of small buckets of solidified paint. Stored in the third cabinet was an uncovered pail (approximately one gallon in size) with about one inch of fresh paint. Plant Manager's Instruction 2271, "Control of Combustible Material", at Paragraph 4.6.2 requires that all paint shall be stored in containers with tight fitting lids in either a UL/FM approved cabinet or the oil storage room located on 595 foot elevation. In addition, the empty containers will be stored in the the approved paint storage location or disposed of immediately. The inspector discussed the violation of PMI-2271 with the Fire Protection Coordinator who issued a Condition Report and took steps to resolve the problem. Unit 1 and 2 Technical Specification 6.8.1.f requires that written procedures shall be implemented for the Fire Protection Program. Failure to comply with PMI-2271, as described above, is a violation of Technical Specification 6.8.1.f. (Violation 315/85014-01; 316/85014-01).
- g. While observing the licensee fill the Unit 1 refueling cavity on April 30, 1985, the inspector asked the operators if the reactor coolant boron concentration was being reduced and if it was, how the minimum flow requirement of Technical Specification 4.1.1.3 was verified. The Reactor Coolant System boron concentration was being





reduced as evidenced by earlier boron samples of 2084 and 2295 ppm and the last boron sample of the refueling cavity makeup water which was 2069 ppm. A verification was made to assure the minimum boron concentration of Technical Specification 3.9.1 was met and would not have been violated. After discussion with the licensee the flow requirement of Technical Specification 4.1.1.3 was verified, and documented in the Control Room Logs.

Technical Specification 4.1.1.3 requires the flow rate of the reactor coolant to the reactor pressure vessel shall be determined to be greater than 3000 GPM within one hour prior to the start of and at least once per hour during a reduction in Reactor Coolant System boron concentration. Failure to determine the Reactor Coolant System flow rate prior to and at least hourly during a boron reduction is a violation of Technical Specification 4.1.1.3. (Violation 315/85014-02)

- h. Unit 2 Control Room Log (Book No. 37, Page 88) for April 16, 1985, at 0138 hours, documented that the Turbine Driven Auxiliary Feedwater Pump (TDAFP) throttle and trip (T/T) was verified closed. The TDAFP T/T valve is normally closed; however, Procedure 1-OHP 4030.001.001 "Routine Plant Inspection Outside the Control Room", requires verification that the TDAFP T/T valve was latched. The log entries from the previous and subsequent shifts properly documented that the TDAFP T/T was latched. This inconsistency in the log was discussed with Operations.
- i. On April 26, 1985, the licensee notified NRC of an apparent Technical Specification violation. D. C. Cook Technical Specification 3.3.3.1 requires radiation monitors OPERABLE per Table 3.3-6. That Table contains no requirements applicable in Mode 5. During Mode 6, however, two of three specified monitors in each of Train A and Train B are required OPERABLE. ACTION 22 states the ACTION requirements of Technical Specification 3.9.9 are to be complied with. Specification 3.9.9, which is identified as APPLICABLE only during core alterations or irradiated fuel movement in containment, requires the containment purge and exhaust isolation system to be OPERABLE; if it is not, the ACTION is to close purge and exhaust penetration to atmosphere.

When the licensee changed from Mode 5 (radiation monitors not required - and they were "blocked") to Mode 6 at 1827 hours on April 23, 1985, the radiation monitors were not restored "OPERABLE". The purge system was in continuous service thereafter with the radiation monitor purge isolation inputs BLOCKED until April 26, 1985 when the distinction in APPLICABILITY between Table 3.3-6 (Mode 6) and Specification 3.9.0 (CORE ALTERATIONS) was noted. At 2241 hours on April 26, 1985, the radiation monitors were UNBLOCKED and compliance to both specifications restored. No core alterations occurred at any time during this period, and the alarm functions of the monitors were always available. Operator response to the alarm, by procedure, would have been to isolate purging. No alarm occurred.

On April 29, 1985, licensee management determined the above was neither reportable nor noncompliance, as the Review Committee had evaluated this in 1984 as an acceptable condition.

- j. At 1015 hours on April 29, 1985, the licensee declared an "Unusual Event" per its emergency classification when a maintenance worker fell inside containment. The individual was taken to Memorial Hospital in St. Joseph, Michigan, with a broken arm, broken leg and possible back injury.

The worker's anti-contamination clothing was not removed due to the suspected back injury. A radiation technician accompanied the worker to the hospital in the Cook-site ambulance, and subsequently returned potentially contaminated materials to the D. C. Cook site.

- k. The licensee declared an Emergency Plan "Unusual Event" at 1021 on April 27, 1985 when gaseous hydrazine was vented from feedwater piping (in the No. 1 steam generator feedwater gallery) which had been cut open for maintenance. A precautionary evacuation in parts of the auxiliary building was conducted. A temporary patch was installed and the area ventilated. When subsequent sampling showed airborne levels had been reduced below hazardous levels, the "Unusual Event" was secured at 1125. A similar event occurred May 14, 1985 at 1338 when the patch began leaking after auxiliary feedwater was aligned upstream of the cut and Condensate Storage Tank (CST) hydrostatic pressure refilled the line back past a leaking check valve, flushing out contaminants. Containment ventilation was secured to avoid drawing gases into the building, and no containment evacuation was necessary, though access was restricted in the feedwater gallery area. This event was secured based on satisfactory air sampling results at 1850.

Two violations and no deviations were identified.

#### 4. Monthly Maintenance Observation

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.

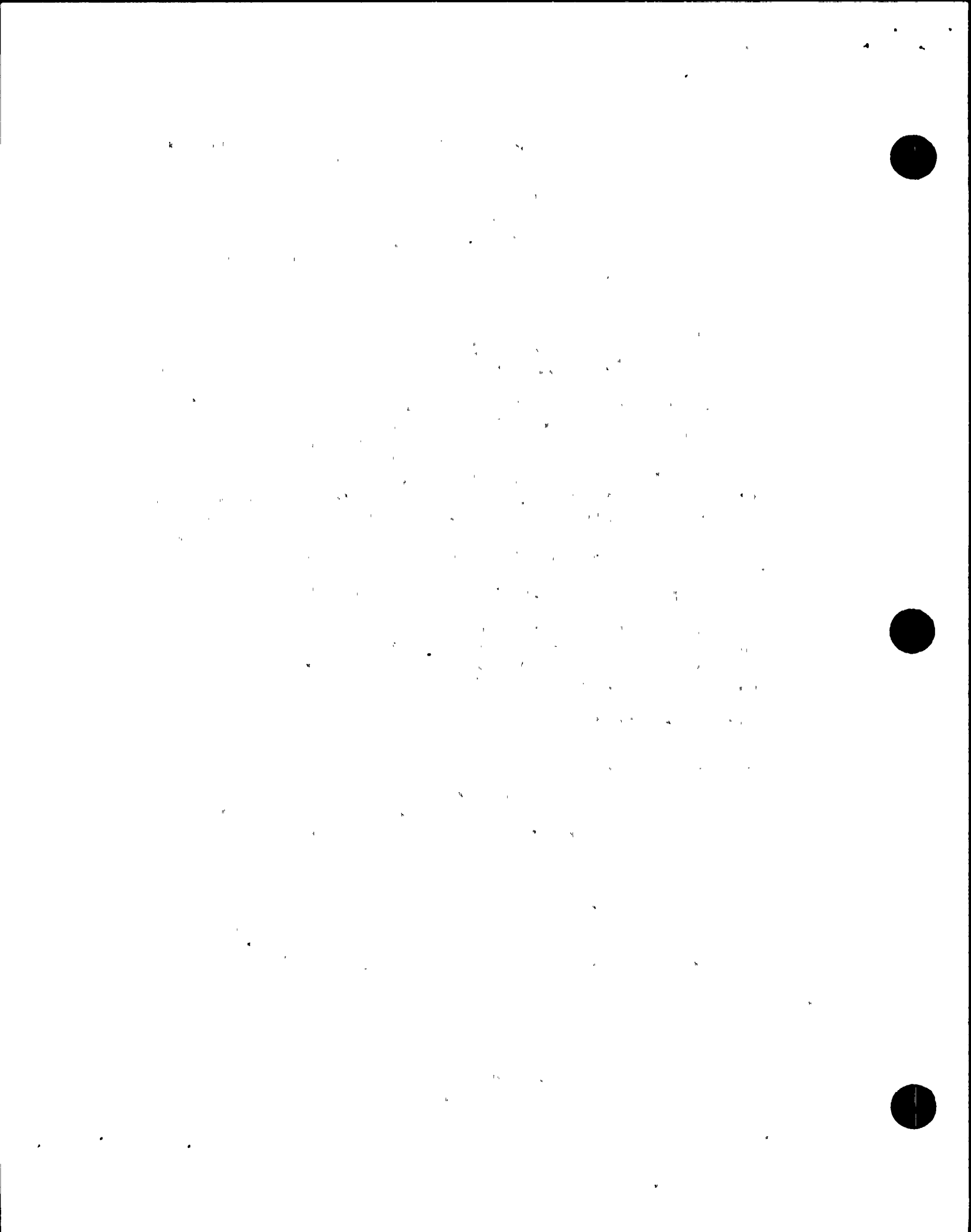
The following items were considered during this review: the limiting conditions for operation were met while components or systems were removed from service; approvals were obtained prior to initiating the work; activities were accomplished using approved procedures.

The following maintenance activities were:

a. Observed

JO No. 94221

Remove and machine 1CD EDG main bearing caps per RFC 2753 and 12 MHP 5021.001.H.



JO No. 97417                    Modify piping for cooling water to oil cooler on governor valve to TDAFP.

JO No. 76596                    Repair to valve D0-121

b. Reviewed

JO No. 82723                    18 month 1CD EDG inspection using Procedures 12 MHP 5021.032.001L, MHP 5021.032.001M, 12 MHP 5021.032.001B, MHP 5021.032.001C, MHP 5021.032.001H.

JO No.(s) 97016, 95080, 82734, 82731, 84877, 84876, 84858, 84857, 68200:                    Quarterly inspection of the Unit 250 Volt D. C. Batteries using 12 MHP 4030 STP.013.

JO No.(s) 16793, 82412, 36296:                    Quarterly inspection of the Unit 2 AB Battery using 2 MHP 4030 STP.035.

JO No.(s) 16768, 17732, 33972, 18006, 97758, 34363:                    Quarterly inspection of the Unit 1 and 2 "N" Train Batteries using 12 MHP 4030 STP.023.

JO No.(s) 41851, 34488, 36300, 36291, 36288, 17900, 27967, 17965:                    Weekly inspection of the Unit 2 "AB" and "CD" Batteries using 12 MHP 4030 STP.013.

No violations or deviations were identified.

5. Monthly Surveillance Observation

The inspector reviewed Technical Specifications required surveillance testing on the systems listed 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 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.

\*\*12 THP 4030 PER.001                    "S" Safety Injection Pump Full Flow Test.

\*\*12 THP 4030 STP.211                    Unit 1 Ice Condenser Basket Weighing.

The inspector reviewed selected surveillance and maintenance procedures for the 250 volt station batteries to verify that the: Technical Specifications are implemented; requirements/recommendations of the "Exide" and "C & D" battery vendor manuals were implemented; and, recommendations of



IEEE Standard 450 were implemented as applicable. The procedures reviewed were:

- a. 12 MHP 4030 STP.013 Maintenance Surveillance Test Procedure For Inspection of 250 Volt, 1CD, and 2CD, Batteries.
- b. 12 MHP 4030 STP.014 Maintenance Surveillance Test Procedure for Plant Batteries Emergency Load Discharge Test.
- c. 2 MHP 4030 STP.023 250 Volt "N" Train Batteries.
- d. 2 MHP 4030 STP.035 Quarterly Surveillance Test Procedure For Plant 2AB Battery.
- e. 2 MHP 4030 STP.036 Weekly Surveillance Test Procedures For Plant 2AB Battery.

The vendor for the 1AB, 1CD, and 2CD 250 volt batteries is "Exide", and the vendor for the 2AB 250 volt and "N" Train batteries is "C & D". The 2AB batteries were originally Exide batteries but were replaced in 1984 with C&D batteries. The C&D vendor manual specifies that minimum applicable volts per cell is 2.13 when the nominal cell specific gravity is 1.210. Unit 2 Technical Specification 4.8.2.3.2.b.1 and 2 MHP 4030 STP.035 at Step 7.33.1 requires that each connected cell shall be greater than 2.10 volts. The inspector questions if this value should be changed from 2.10 volts to 2.13 volts. The licensee was requested to review this item and verify that the appropriate limit for minimum volt per cell is specified. (Open Item 316/85014-02).

Unit 1 and 2 Technical Specification 4.8.2.3.2.b.1 (250 volt D. C. battery banks) and 4.8.2.5.2.6.1 ("N" Train battery banks) requires verification every 92 days that the voltage of each connected cell has not decreased more than 0.05 volts from the value observed during the original acceptance test. The inspector reviewed 12 MHP 4030 STP.013, .023, and .025 and found that this requirement is restated but the original acceptance test results are not in the procedure. The inspector was able to obtain a copy of the original acceptance test results from a Maintenance Engineer but noted that the results did not appear to be controlled such that when a cell is replaced the new cell acceptance criteria is available for review. The inspector reviewed Condition Reports and found that cell 108 for battery 1CD was replaced on January 25, 1985. The quarterly inspection (12 MHP 4030 STP.013) was performed on April 13, 1985. The original acceptance test results that the inspector was given had not been modified to reflect acceptance test results for the replacement to cell 108. This item was discussed with the Maintenance Superintendent with a request that a review be performed to assure that the requirements of Technical Specification 4.8.2.3.2.6.1 were performed during the quarterly surveillance test. (Unresolved Item 315/85014-03).

The inspector reviewed random selections of completed surveillance procedures and found three examples (listed below) of failure to comply with surveillance procedures of safety related equipment. These were discussed with the Maintenance Superintendent.

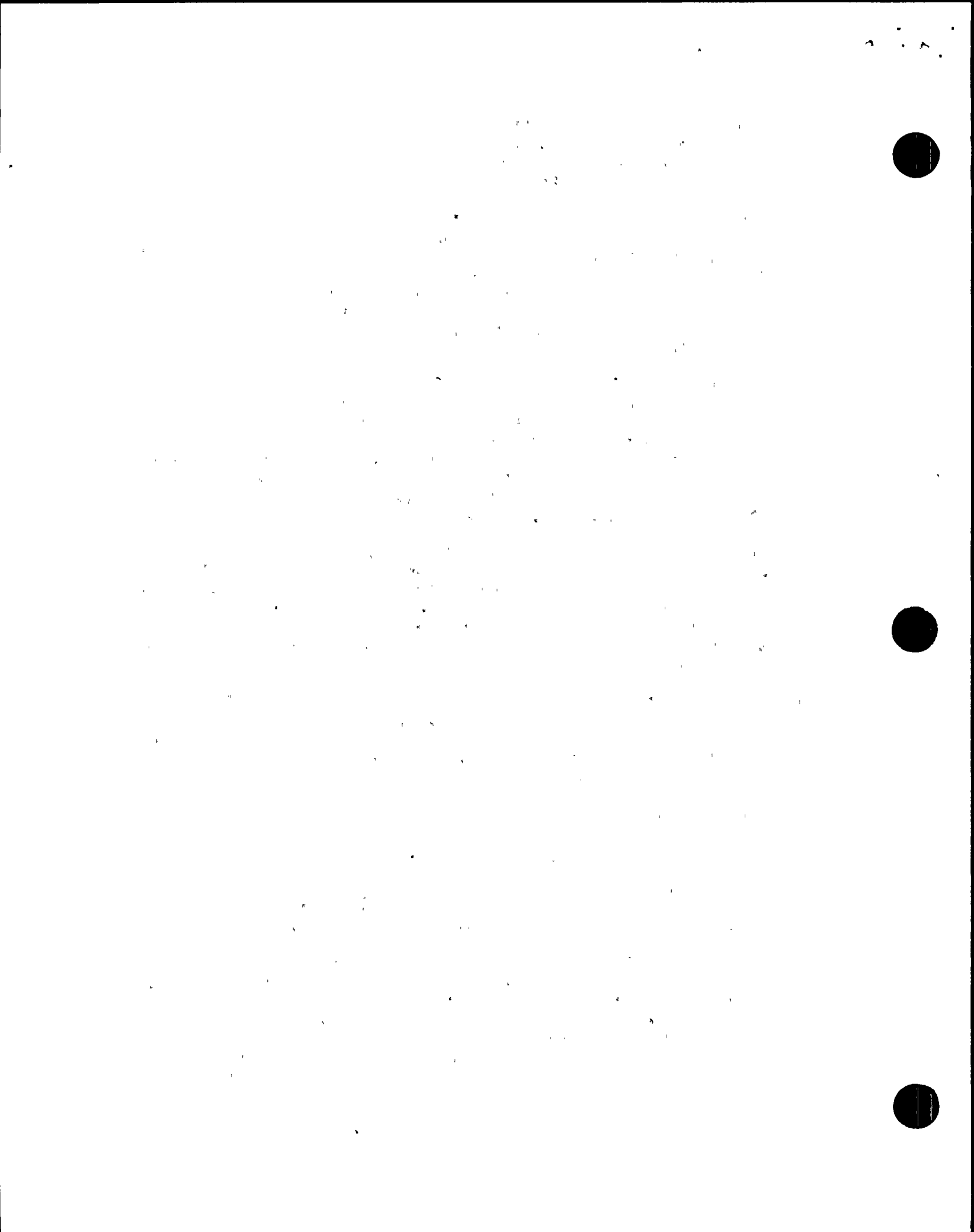
- a. Procedure 12 MHP 4030 STP.023, performed on September 17, 1984, for the Unit 2 "N" Train batteries requires verification that the voltage of each connected cell has not decreased more than 0.05 volts from the values recorded during the acceptance test. Comparison of the acceptance test values obtained from the Maintenance Engineer shows cell 6 had decreased 0.06 volts from the value recorded during the acceptance test. This is a failure to comply with 12 MHP 4030 STP.023.
- b. Procedure 12 MHP 4030 STP.013, performed on December 26, 1984, for the Unit 1 AB batteries, requires the specific gravity be corrected to 77°F. This is accomplished in Step 7.4 by averaging the temperature of the selected cell and using this temperature to determine the specific gravity temperature correction. The data documented in Attachment 2 contains a math error which resulted in the use of the wrong average temperature and the wrong correction factor. This is failure to comply with 12 MHP 4030 STP.013.
- c. Procedure 2 MHP 4030 STP.025, performed on April 10, 1985, for the Unit 2 AB batteries, requires the average cell temperature be determined by averaging the cell temperature of every 6th cell (19 cell total). Table 1 shows the reading for cell 24 was not recorded resulting in the total temperature for 18 cells being divided by 19 to obtain the cell average. This is failure to comply with 12 MHP 4030 STP.025

Unit 1 and 2 Technical Specification 6.8.2.c requires that written procedures shall be implemented covering surveillance and test activities of safety related equipment. Failure to comply with 12 MHP 4030 STP.013, .023, and 025, as described above is a violation of Technical Specification 6.8.1.c. (Violation 315/84014-04; 316/84014-03).

One violation, and no deviations were identified.

## 6. Independent Inspection Areas

- a. In response to a regional request regarding the use of temporary door restraints on Ice Condenser Lower Inlet Doors, the inspector found that 24 temporary door restraints (in the form of tape) were used in Procedure 12 THP 4030 STP.207 Rev. 9, "Ice Condenser Lower Inlet Doors". The temporary door restraints were used to ensure that the lower inlet doors were opened one at a time, until the initial door opening torque was measured for each door. The procedure contained steps to remove the 24 lower inlet door restraints after the surveillance was complete and verification of removal was required on a sign-off sheet. In reviewing the procedure, no inadequacies were found regarding the use of temporary door restraints.





The inspector did identify minor inconsistencies while reviewing STP.207. During a discussion with a Performance Engineer, it was determined that these inconsistencies had already been identified and changes made.

- b. The inspector was asked to review the licensee's action on selected safety issues as defined in the Institute of Nuclear Power Operations (INPO), Significant Operating Experience Reports (SOER), and determine if the recommendations of the SOER were implemented. The selected safety issues reviewed were: Steam Binding of Auxiliary Feedwater Pumps (SOER 84-03), and Mispositioned Control Rod (SOER 85-03). The results of the review were sent to Region III on April 30, 1985 and May 14, 1985.

No violations or deviations 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 this inspection are discussed in Paragraph 5 above.

8. Unresolved Items

Unresolved Items are matters about which more information is required in order to ascertain whether they are acceptable, violations, or deviations. Unresolved Items are discussed in Paragraph 5.

9. Management Meeting

The inspector met with the licensee representatives (denoted in Paragraph 1) at the conclusion of the inspection on May 23, 1985 and summarized the scope and findings of the inspection.

The inspectors asked those in attendance at the meeting whether they considered any of the matters discussed to contain proprietary information or other information exempt from disclosure. No such information was identified.

