

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-315/87014(DRP); 50-316/87014(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, Michigan

Inspection Conducted: June 16 through July 13, 1987

Inspectors: B. L. Jorgensen

J. K. Heller

Approved By: *M. J. Farrell*
B. L. Burgess, Chief
Projects Section 2A

7/30/87
Date

Inspection Summary

Inspection on June 16 through July 13, 1987 (Reports No. 50-315/87014(DRP); 50-316/87014(DRP))

Areas Inspected: Routine unannounced inspection by the resident inspectors of: actions on previously identified items; operational safety verification; radiological controls; maintenance; surveillance; fire protection and cleanliness; emergency planning; security; outages; quality programs; training and qualification effectiveness; Information Notices; and NRC requests.

Results: Of the 13 areas inspected, no violations or deviations were identified in any areas.

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DETAILS

1. Persons Contacted

- *W. Smith, Jr., Plant Manager
- *A. Blind, Assistant Plant Manager, Administration
- *J. Rutkowski, Assistant Plant Manager, Production
- *L. Gibson, Assistant Plant Manager, Technical Support
- *B. Svensson, Licensing Activity Coordinator
- T. Kriesel, Technical Superintendent, Physical Sciences
- K. Baker, Operations Superintendent
- E. Morse, Quality Control Superintendent
- *T. Beilman, I&C/Planning Superintendent
- *J. Allard, Maintenance Superintendent
- *T. Postlewait, Technical Superintendent, Engineering
- *M. Horvath, Quality Assurance Supervisor (AESPC)
- *D. Loope, Radiation Protection Supervisor
- L. Matthias, Administrative Superintendent
- W. Nichols, Training Manager

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

*Denotes some of the personnel attending Management Interview on July 13, 1987.

2. Actions on Previously Identified Items

- a. (Closed) Open Item (315/85017-04): Adequacy of Safety Injection (SI) pump protection during installation and testing of Plant Safety System Display (PSSD) computer. As part of restoration testing, Recirculation Valves 1-IMO-262 and 1-IMO-263 were cycled closed, then reopened. These are series minimum flow recirculation valves common to both pumps and are both normally required to be open. The valves are not even cycled for testing purposes while the Unit is in power operation. On further evaluation of the subject event, the inspector determined neither valve was closed for more than a few moments. With either of the valves closed, the system configuration equates to administrative inoperability of both SI pumps, a condition permitted for up to one hour under Technical Specifications. The times involved were far less than an hour in this case.
- b. (Closed) Violation (315/86022-01): Gauges were left installed after maintenance testing because of inadequate procedure controls. The licensee's response (AEP:NRC:1002) dated July 31, 1986, described review and correction of maintenance procedures, including **1 MHP 4030 STP.002, which was noted in a subsequent inspection (Report No. 315/86025; No. 316/86025) as being similarly deficient in addressing gauge removal. The response also committed to completion of a sampling review of non-maintenance procedures by December 1, 1986.



Per Procedure QAP 18.3 "Guidance and Requirements for Selection of Sample Sizes," a random sample of 45 procedures was reviewed looking for absence of restoration steps. No such problems were noted, so the sampling was not expanded.

- c. (Closed) Violation (315/86025-01): Unit 1 lacked alarm response instructions for several essential service water (ESW) and component cooling water (CCW) alarms. The licensee's letter (AEP:NRC:1006) dated September 5, 1986, described corrective and preventive actions. A licensee audit disclosed one additional discrepancy, which was corrected immediately upon identification. The omissions had resulted from inconsistent practices in utilizing design change forms, so communication on timing of needed procedure changes was not positive. The governing procedure (PMI-5040, "Design Change Control Program," Revision 9, dated April 20, 1987) now contains, in Section 4.15.2.3, a requirement to provide written Annunciator Revision forms (using procedure Attachment 7) to the Operations Department, as part of preparing the modified system for release.
- d. (Closed) Violation (315/86030-01): No Licensee Event Report (LER) was submitted as required when Unit 1 main steam safety relief valves were found with lift pressure settings outside the Technical Specification allowable range. The licensee issued LER 86020 on September 24, 1986, describing the findings, and corrective and preventive actions, and responded to the violation in their letter (AEP:NRC:1013) dated November 7, 1986. Procedure revisions to require initiation of a Condition Report under the licensee's corrective action system, which is the initiating mechanism for an LER, have been verified. During the current inspection, testing of main steam safety relief valves on Unit 1 occurred again (see Paragraph 6, "Surveillance") and was observed by the inspector. When some lift settings were found lower than the specified range, a Condition Report was issued.

No violations, deviations, unresolved or open items were identified.

3. Operational Safety Verification

Routine facility operating activities were observed as conducted in the plant and from the main control rooms. Plant startup, steady power operation, plant shutdown, and system(s) lineup and operation were observed as applicable.

The performance of licensed Reactor Operators and Senior Reactor Operators, Shift Technical Advisors, and Auxiliary Equipment Operators was observed and evaluated, including procedure use and adherence, records and logs, communications, shift/duty turnover, and degree of professionalism of control room activities.

Evaluation, corrective action, and response for off-normal conditions or events, if any, were examined. This included compliance to any reporting requirements.

Observations of the control room monitors, indicators, and recorders were made to verify the operability of emergency systems, radiation monitoring systems and nuclear reactor protection systems, as applicable. Reviews of surveillance, equipment condition, and tagout logs were conducted. Proper return to service of selected components was verified.

- a. Unit 1 operated routinely at its 90 percent power target until commencement of a brief coastdown and then shut down on June 27, 1987, to begin a refueling, test and maintenance outage. Preparations for refueling are discussed further in Paragraph 10, "Outages."
- b. Unit 2 operated routinely at its 80 percent power target with brief periods up to 90 percent to support system load demand and down to about 55 percent (on one occasion) to permit routine condenser section cleaning and maintenance.
- c. The inspection included a specific review of selected operating procedures, as follows:
 - i) **01-OHP 4024.119 "Annunciator 19 Response - Station Auxiliary AB," Revision 4 through Change Sheet 6 dated October 8, 1985.

The annunciator panel includes emergency diesel IAB alarms, which were particularly reviewed. This panel is typical of three other alarm panels, one for each of the other three emergency diesels onsite. Window 17, involving lube oil tank level hi/lo was of interest in that no setpoint for hi level was specified, despite Revision 4 having been effective since 1982, when the response procedure was issued with the word "later" in lieu of a numerical hi level value. Followup with the Operations Department disclosed a hi lube oil level setpoint (17 inches below the tank flange) has been established and will be incorporated in the next procedure revision.

Window 26 identifies mispositioned control switches located on the local control panel in the diesel room, as well as air filter heater voltage failures. The procedure indicates no automatic actions occur in response to the condition(s) and routinely refers the operator to the system lineup procedure. The condition is one currently identified by alarm window color code as preventing the diesel from delivering emergency power. The apparent inconsistency between color-coding (highly critical alarm) and the response procedure (no automatic actions, rather routine followup) had already been identified by licensee personnel before the inspector became interested, and a reevaluation is underway.

- ii) **02-OHP 4021.032.001 "Starting, Paralleling, Loading and Shutting Down the Emergency Diesel Generator(s)," Revision 4 through Change sheet 8 dated February 5, 1987.

iii) **02-OHP 4021.032.002 "Placing Emergency Diesel Generator Lube Oil System in Service," Revision 3 through Change Sheet 1 dated April 3, 1984.

iv) **02-OHP 4021.032.006 "Emergency Diesel Generator Miscellaneous System Valve Lineup," Revision 5 through Change Sheet 7 dated April 4, 1986.

System valve and switch lineup check sheets from Items iii and iv were utilized in system walkdowns; see Paragraph 3f below.

- d. Continuing control room "human factors" modifications were observed during this inspection. Control room annunciator panels were modified by implementation of a color coding criteria dividing alarms into three priorities. First priority alarms are red and must be responded to immediately. Second priority alarms have an amber lens and must be responded to promptly. The remainder are third priority, have white lenses, frequently convey status more than "alarming" information, and must be responded to in a timely fashion.

A special category applicable to the emergency diesel generator annunciator panels is characterized by a purple "slash" across the window. These are intended to indicate a condition which would not allow a diesel to deliver emergency power. As noted in Subparagraph 3.c.i above, continuing evaluations are ongoing for some of the categorizations.

Of the approximately 1,400 possible "alarms" for each D. C. Cook Unit control room, about 12% were determined to be first priority, 34% were determined to be second priority, and the remainder are third priority.

A separate human factors item involved implementation of a new "hot pink" tagging system to identify control room equipment which is inoperable.

- e. Occasional tours were conducted in company with senior licensee plant management. During this inspection, these tours covered various warehouse facilities, Unit 1 lower containment and the auxiliary building. The warehouse tour is discussed further in Paragraph 11, "Quality Programs."
- f. Independent walkdowns of selected Unit 2AB emergency diesel generator auxiliaries were conducted during this inspection utilizing the following:
- i) 2-OHP 4021.032.002 Data/Signoff Sheet 5.1 "Emergency Diesel Generator 2AB Lube Oil System Valve Lineup."
 - ii) 2-OHP 4021.032.006 Data/Signoff Sheet 5.1 "(2AB) Emergency Diesel Generator Miscellaneous System Valve Lineup."



iii) 2-OHP 4021.032.006 Data/Signoff Sheet 5.7 "Aligning Diesel Generator Inverter."

Item i) above which included approximately 100 valves, contained seven valves identified as simply OP (open) or CL (closed), which the inspector found locked in position. The normal licensee procedure convention is to identify locked-open valves as "LOP" and locked-closed valves as "LCL." No valves specified to be locked in position were found not locked.

Inspection of Item iii) above disclosed a floor drain had been taped over near the inverter, apparently to prevent potentially oil-contaminated drainage to the turbine building sump. Subsequent water leakage in the room had accumulated in a puddle over the drain, which extended around/under the inverter panel. This condition was reported to an Operations Department production controller for review and appropriate action.

No violations, deviations, unresolved or open items were identified.

4. Radiological Controls

During routine tours of radiologically controlled plant facilities or areas, the inspector observed occupational radiation safety practices by the radiation protection staff and other workers.

Effluent releases were routinely checked, including examination of on-line recorder traces and proper operation of automatic monitoring equipment.

Independent surveys were performed in various radiologically controlled areas.

- a. The inspector toured the licensee's onsite Contaminated Equipment Storage Area (CESA) to review the status and implementation of controls at this relatively new facility. The CESA was established in a locked, isolated portion of a building outside the immediate plant area to reduce clutter in the auxiliary building. During the tour of the CESA, the inspector reviewed the index of stored containers. Records relating to contents, surveys, and smears for selected containers were also examined. Independent surveys of the general area and of selected containers were performed. Compliance to provisions of the Radiation Work Permit (RWP) established for the CESA facility was selectively verified, including associated "Special Instructions" adopted from the CESA controlling procedure. At the time of the inspection, the facility was clean, orderly and well below full capacity.
- b. During a tour of the Unit 1 Lower Containment, the inspector accompanied personnel who were testing an electronic, digital/audible pocket dosimeter. The inspector was informed that this dosimeter (if found acceptable) would be used in addition to pencil

dosimeters as an aid to the worker. During this test, the results were in satisfactory agreement when comparing the pencil and electronic dosimeters.

No violations, deviations, unresolved or open items were identified.

5. Maintenance

Maintenance activities in the plant were routinely inspected, including both corrective maintenance (repairs) and preventive maintenance. Mechanical, electrical, and instrument and control group maintenance activities were included as available.

The focus of the inspection was to assure the maintenance activities reviewed 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; and post-maintenance testing was performed as applicable.

The following activities were inspected:

a. Job Orders (JO) Reviewed

- i) JO 45424 Repair Seat Leakage for 2-SI-170-L2
File: ME-VLC51CN10**
- ii) JO 45425 Repair seat leakage for 2-SI-170-L3
File: ME-VLC-51CN10**
- iii) JO 45426 Repair seat leakage for 2-SI-252N
File: ME-VLC-51CN10**

b. Job Orders (JO) Observed

- i) JO MHP-SP-122 Testing of 2-QT-506
- ii) JO 10659 Replacement of cell 59 to Unit 1AB
File: EB-BE1-Batt-AB battery

The replacement cell was purchased when the AB battery was replaced during a previous refueling outage. The inspector verified that the cell had been maintained on a float charge while in storage and that periodic operability checks were made.

- iii) JO 720053 Calibrate Relay 1-T11A12
File: In-I&C-1-RLY
- iv) JO 000727 Support Design Change RFC-DC-12-2761

This design change involves new, seismically qualified overspeed trip devices and a new local speed meter on the 1AB emergency diesel generator.

v) JO 004657 Refurbish operator for Valve 1-MCM-231

Testing of the valve, which is a steam supply valve to the Unit 1 turbine-driven auxiliary feedwater pump, included visual and other inspections as part of a MOVATS implementation program. The operator grease appeared to be of two types and was hardened in some areas, leading to the decision for refurbishment. Discussion with the maintenance superintendent revealed that the grease was compatible and did not affect operability.

No violations, deviations, unresolved or open items were identified.

6. 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, 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.

The following activities were inspected.

- a. **1-OHP 4030 STP.022R "Unit One ESW System Refueling Surveillance Test."
- b. **1-OHP 4030 STP.026 "Auxiliary Power Transfer Test Surveillance Procedure."
- c. **1-OHP 4030 STP.027CD "CD Diesel Generator Operability Test (Train A)."
- d. **1-OHP 4030 STP.038 "Leak Rate Test of Liquid System."

This review covered Section 8.10 "ECCS - Safety Injection System (Data Sheet 4)" only.

- e. 1-OHP 4030 STP.037 "Refueling Surveillance."

Examination of this area was restricted to procedure review since refueling had not yet begun. The review supported conclusions of adequate administrative coverage of periodic equipment/condition checks as noted in Paragraph 10, "Outages" below. The procedure is primarily implemented via four attachments covering surveillances required before entering MODE 6 (refueling), before beginning core alterations, and shiftly and weekly requirements to continue core alterations.

- f. **1-THP 4030 STP.100A "Reactor Protection and Engineered Safeguards System Time Response - Train A."
- g. 1-IMP-SP-126 "Unit 1 Main Steam Setpoint Verification Using Trevitest Testing Equipment."

The inspector found the test was performed by contractor personnel with oversight by site Quality Control and site Engineering personnel. When as-found relief valve settings were out-of-tolerance a Condition Report was written and evaluated for reportability. Observations made during the performance of this test were the bases to closeout a previous violation on this topic (see Paragraph 2.d, "Action on Previously Identified Items").

- h. **12 THP 4030 STP.211 "Unit 1 Ice Basket Weighing Surveillance."

The inspector toured the ice condenser with a Site and a Corporate Engineer and observed performance of this surveillance test. Members of the crew performing the test were quizzed on the contingency steps to free a frozen ice basket. The responses given were acceptable and reflected knowledge of the procedure.

No violations, deviations, unresolved or open items were identified.

7. Fire Protection

Fire protection program activities, including fire prevention and other activities associated with maintaining capability for early detection and suppression of postulated fires, were examined. Plant cleanliness, with a focus on control of combustibles and on maintaining continuous ready access to fire fighting equipment and materials, was included in the items evaluated.

On July 9, 1987, as part of an ongoing construction project to support future replacement of the Unit 2 steam generators, it was necessary to isolate a portion of the station fire protection underground ring header so piping could be relocated outside the construction area. Special telephone and written notifications, as required by Technical Specifications, were made to NRC Region III.

No violations, deviations, unresolved or open items were identified.

8. Emergency Preparedness

The licensee declared an Emergency Plan "Unusual Event" at 6:55 p.m. on June 15, 1987, upon determination that both of the Unit 2 containment spray system pumps should be considered inoperable as a result of finding that previous system testing had relied on an improperly calibrated, shared flow transmitter. Emergency Plan notifications were made and, pursuant to Technical Specifications, a plant shutdown was begun. Concurrently, a correct calibration was performed and both pumps were satisfactorily tested and declared OPERABLE. The "Unusual Event" was then secured at

8:53 p.m. the same day. A review of Unit 1 instruments found that a similar error did not occur there. This matter may be examined further in followup of the anticipated Licensee Event Report (LER) addressing the event.

9. Security

Routine facility security measures, including control of access for vehicles, packages and personnel, were observed. Performance of dedicated physical security equipment was verified during inspections in various plant areas. The activities of the professional security force in maintaining facility security protection were occasionally examined or reviewed, and interviews were occasionally conducted with security force members.

The inspector observed compensatory security measures when surveillance activities of the circulating water intake structure required passage of personnel from the protected area to the owner-controlled area via a non-routine path. The inspector verified that the guard was cognizant of and implementing his post orders.

No violations, deviations, unresolved or open items were identified.

10. Outages

Unit 1 commenced a scheduled refueling, maintenance and testing outage on June 27, 1987. The inspector selectively reviewed various aspects of the outage planning and administrative control processes.

The licensee has heavily emphasized outage planning. A dedicated planning organization, which has been in existence for some time, developed the detailed outage schedule using input from all organizations covering manpower, sequencing, interferences, etc. The inspector provided selected summaries on the outage schedule to NRC Region III for review and use in inspection planning.

Administrative controls were reviewed with the focus being preparations for the refueling portions of the outage. Procedural coverage was verified for such attributes of administrative control as definition of lines of supervision, manning, personnel training and qualification, equipment checkouts, and communications. Controls for plant conditions during refueling, including reactivity, decay heat removal and maintenance of containment integrity, were also briefly examined.

Information was provided to the NRC Office of Nuclear Reactor Regulation pursuant to their request and questions regarding water level control and assurance of decay heat removal. This matter relates to IE Information Notice 87-23, which is discussed further in Paragraph 13.

The inspector routinely attended outage meetings among principal licensee staff to assess the flow, evaluation, and management of status information, and the decisions and subsequent dissemination of information and directions based on such meetings. Throughout the



early portion of the outage covered by this inspection, the licensee did a good job in identifying potential problems or conflicts and in assigning resources to resolve them. Good communications were established throughout the plant to keep workers informed on outage progress against the established schedule.

No violations, deviations, unresolved or open items were identified.

11. Quality Programs

The effectiveness of management controls, verification and oversight activities in the conduct of jobs observed during this inspection was evaluated.

The inspector frequently attended management and supervisory meetings involving plant status and plans and focusing on proper co-ordination among departments.

The results of licensee auditing and corrective action programs were routinely monitored by attendance at Problem Assessment Group (PAG) meetings and by review of Condition Reports, Problem Reports, Radiological Deficiency Reports, and security incident reports. As applicable, corrective action program documents were forwarded to NRC Region III technical specialists for information and possible followup evaluation.

- a. On July 6, 1987, the licensee commenced a significant new type of audit/inspection under the overall direction of the Corporate Quality Assurance Department. The activity involves an integrated evaluation of an installed safety system - in this case, the auxiliary feedwater system - which is highly analogous to and patterned after the NRC Safety System Functional Inspection (SSFI) concept. A multi-disciplinary team of technical and quality assurance personnel was assembled for this first evaluation, which was anticipated to last two to three weeks and involve several hundred inspector-hours of effort.
- b. On June 30, 1987, the inspector toured the licensee's onsite warehouse facilities outside the plant protected area. The licensee had completed a consolidation project (begun about January 1987) on June 8, with final "turnover" of the former construction storerooms. Prior to the consolidation project, the maintenance of separate plant and construction warehousing and staging facilities is thought to have contributed to some instances involving issue and installation of incorrect parts/components in safety-related systems. The tour included four interconnected buildings which contained subdivisions allowing separation and distinction of the following facilities: receipt inspection; Quality Control "Hold" and "Reject;" "accepted" certified materials; dedicated design change "special orders;" environmentally controlled, hazardous chemicals, and capitalized spares and consumables. The facilities were found to be clean and orderly, and supplies appeared clearly marked and readily accessible. The inspector observed two "DO NOT REMOVE" tags (containing necessary identifying information) that had fallen to the floor beneath the piping to which they were supposed to be attached. This was noted to a representative of the warehouse for correction.

- c. Licensee Procedure PMI-2140, "Temporary Modifications," Revision 7 dated July 1, 1986, was reviewed during this inspection. The review focused on consistency with underlying regulatory and quality assurance requirements of 10 CFR 50, Appendix B, the Technical Specifications, and the Quality Assurance program, including Industry Standards. No problems were noted.

The inspector did note a cross-reference at Paragraph 3.3 to Procedure PMI-5010 for equipment which is to remain out-of-service for the duration of a temporary modification. Procedure PMI-5010 was cancelled in January 1987, and its provisions incorporated into PMI-5020, "Maintenance Policy." The discrepant reference was identified to the licensee for correction, and the inspector learned it had already been corrected in Revision 8 effective June 1, 1987.

No violations, deviations, unresolved or open items were identified.

12. Training and Qualification Effectiveness

For each area addressed in this report, which involved inspector observation of the conduct of activities and/or discussions with licensee personnel, the inspector's evaluation included a judgement of the degree of knowledge or skill exhibited. No instances of poor knowledge or skill were noted.

Two training sessions were observed, both involving a "case study" of an event in Unit 1 on April 8, 1987, involving a plant cooldown which violated primary coolant system pressure/temperature limits. One session was a "dry run" presentation while the second was a presentation for an operating shift crew as part of their routine training cycle. All crews will be presented with the "case study" training. The inspector considered the presentations well-researched, factual, and correctly focused to the event causes. Specific class involvement in applying prior training (in teamwork and in diagnostic methods) to the understanding of the event was incorporated in the sessions. The licensee had previously used "case studies" developed by a consultant, and involving events at other facilities; this was the first such session developed solely by the licensee's own Training Department.

No violations, deviations, unresolved or open items were identified.

13. Information Notices

The inspector reviewed the NRC communications listed below and verified that the licensee has received the correspondence, the correspondence was reviewed by appropriate management representatives, a written response was submitted if required, and plant-specific actions were taken as described in the licensee's response.

I.E. Information Notice 87-23, "Loss of Decay Heat Removal During Low Reactor Coolant Level Operation." The licensee has experience with events at D. C. Cook several years ago involving losses of decay

heat removal from causes similar to those discussed in this Information Notice. Corrective actions for those events appear to cover the concerns raised in the Notice, and have prevented any recurrence at either D. C. Cook Unit.

No violations, deviations, unresolved or open items were identified.

14. Region III Requests

a. By memorandum from the NRC Region III Director, Division of Reactor Projects, dated June 20, 1987, the inspector was requested to review licensee activities and programs, if any, to address high ambient temperature conditions and effects on plant equipment, particularly electrical equipment. Performance of the requested review showed the following:

i) The licensee considers ambient temperatures in procurement of electrical equipment. DCC (for D. C. Cook) Specifications have been developed to include required capability for electrical components to function "continuously" at relatively high ambient temperatures (40 or 50 degrees C are typical) or within a specified temperature range. "Aging" acceleration as a function of high service temperature exposure is reportedly considered in selected DCC Specifications. The inspector briefly reviewed several DCC Specifications as noted below:

DCC EE 120 QCN "Relay and Control Devices"

DCC EE 126 QCN "Instrumentation Cable"

DCC EE 130 QCN "Design and Installation Criteria for RPS
and ESS Cable Systems"

DCC EE 137 QCN "DC Distribution Cabinets and Panels"

DCC EE 162 QCN "AC Distribution Cabinets and Panels - Mild
Environment"

DCC EE 171 QCN "Power Cable for D. C. Cook Plant (Outside
Containment)"

DCC EE 185 QCN "250 Volt, 0-600 Ampere Fuses"

DCC EE 186 QCN "600 Volt, 0-600 Ampere Fuses"

DCC EE 193 QCN "250 Volt Battery System, Storage Batteries
and Racks"

DCC EE 301 QCN "Environmental Qualification Test Specifications
for Electrical Cables Exposed to Outside
Containment High Energy Line Breakers."

Of the above sample, only 120 QCN and 130 QCN were found silent on the subject of ambient temperature capability. No examples were noted among the above DCC specifications where accelerated aging was addressed.

- ii) Historically, reliability problems with electrical equipment which appeared related to high ambient temperatures have not occurred - with one major exception. Class IE Control Room Instrument Distribution (CRID) inverter power supplies had failed several times due to high ambient temperatures, resulting in reactor trips. The CRID panels were replaced in both Units during outages in 1985. In a corollary activity, a recent design change has been completed to increase the reliability and efficiency of various air conditioning systems so "hot spots" are minimized.
 - iii) In followup to the CRID problems, the licensee has installed a temperature profile monitoring system at eight locations throughout the Unit 1 4 KV switch gear rooms (near transformers, in both 1E battery rooms, and two CRID areas) and at one location near the 1 AB emergency diesel generator. A small process monitoring computer recording the data is purged monthly, producing hard-copy temperature data which is transmitted to the licensee's Corporate electrical engineering group for review, dissemination to other groups, and retention. At the time of this inspection, the system had been in place about a year and its future was indeterminate.
 - iv) In support of the electrical equipment qualification (EQ) program and controls necessitated by 10 CFR 50.49, the licensee is involved in various initiatives relating to temperature effects on electrical equipment performance. For example, the licensee is a participant in a program with the University of Connecticut, sponsored by the Electric Power Research Institute (EPRI), to compare performance of naturally vs. artificially "aged" electrical cables. Also, areas such as the pressurizer and steam generator enclosures have long been known to experience typical ambient temperatures above 50 degrees C. This has been accounted for in calculated reductions in service life; an action directed to maintaining environmental qualification.
- b. By letter dated May 15, 1987, and Temporary Instruction 2515/84, Region III requested that the inspector follow the licensee's action taken in response to an April 1981 Order which modified the License concerning primary coolant system (PCS) pressure isolation valves. The Order was issued in response to the WASH-1400 Reactor Safety Study (RSS) which identifies that an intersystem loss of coolant accident (LOCA) may occur when check valves isolating the high pressure primary coolant system (PCS) from the low pressure safety injection (LPSI) piping fail to function as a pressure isolation barrier. An over pressurization and rupture of the LPSI piping then results in a LOCA outside of containment.



The inspector reviewed the plant Technical Specifications and Surveillance Procedures and found the following:

i) Technical Specifications

The licensee has incorporated the April 1981 Order into Section 3.4.6.2 of the Unit 1 and Unit 2 Technical Specifications. In addition, the pages are marked "Order dated April 1981."

ii) Procedures

Test Procedure **12 THP STP.226 implements the requirements of Technical Specification 3.4.6.2. The acceptance criteria reference the Technical Specification valve leakage limit of 5 GPM, but impose an administrative limit of 1 GPM and provide required corrective action in the event the leakage is unacceptable. In addition, the test procedure requires that leakage rates received at test pressures less than the maximum potential pressure differential across the valve be adjusted by assuming leakage to be directly proportional to the pressure differential to the one-half power.

iii) Data Review

The inspector reviewed the following completed **12 THP STP.226 surveillance tests:

<u>Unit 1</u>	<u>Unit 2</u>
STP.226 Performed 4/14/85	STP.226 Performed 7/20/85
Performed 9/12/85	Performed 3/3/86
Performed 5/28/86	Performed 3/9/87
Performed 4/10/87	

The valves passed in the "as-found" condition for six of seven tests reviewed. For the remaining test, the failures were identified on an internal corrective action document (Condition Report), the repairs were documented/performed using the Job Order system, and operability testing was performed prior to returning the valves to service.

No violations, deviations, unresolved or open items were identified.

15. Management Interview

The inspectors met with licensee representatives (denoted in Paragraph 1) on July 13, 1987, to discuss the scope and findings of the inspection. In addition, the inspector asked those in attendance whether they considered any of the items discussed to contain information exempt from disclosure. No items were identified.