U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-315/87017(DRP); 50-316/87017(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: July 14 through August 24, 1987

Inspectors: B. L. Jorgensen

J. K. Heller

Approved By: B. L. Burgess, Chief
Projects Section 2A

9/15/87
Date

Inspection Summary

Inspection on July 14 through August 24, 1987 (Reports No. 50-315/87017(DRP); 50-316/87017(DRP))
Areas Inspected: Routine unannounced inspection by the resident inspectors of: actions on previously identified items; operational safety; reactor trips; radiological controls; maintenance; surveillance; fire protection and cleanliness; emergency preparedness; security; outages; quality program activities; training and qualification effectiveness; reportable events; and, NRC Region III requests.
Results: Of the 14 areas inspected, no violations or deviations were identified in 13 areas. One violation was identified (Level IV - fire protection surveillance procedure not implemented - Paragraph 2.b) in the remaining area.

## 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. Droste, Maintenance Superintendent (since August 17, 1987)
T. Postlewait, Technical Superintendent, Engineering
*M. Horvath, Quality Assurance Supervisor
D. Loope, Radiation Protection Supervisor
*J. Allard, Maintenance Superintendent (prior to August 17, 1987)
*M. Gumns, Administrative Compliance Coordinator, Radiation Protection
*P. Jacques, Fire Protection Coordinator
*J. Sampson, Safety and Assessment Superintendent

The inspector 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 August 24, 1987.

2. Actions on Previously Identified Items

a. (Open) Unresolved Item 315/85025-06: Local Leak Rate Tests (LLRT) continually exceed Technical Specification cumulative limit. The Unresolved Item focused on whether repetitive containment local leak rate test failures have been adequately addressed; i.e., have the same penetrations repeatedly failed or has there been some other pattern to the failures which should have been prevented. During this inspection, as described in Paragraph 7.d below, another test failure occurred, in a manner preventing ready quantification of the leak rate. This item will remain open pending further review of both preventability of the problems and of how "unquantifiable" leakage values are treated when they occur.

b. (Closed) Unresolved Item 315/87009-02; 316/87009-01: Apparent failure to perform required monthly fire extinguisher checks. Licensee Quality Assurance Surveillance No. 12-87-37 was conducted March 2-6, 1987 to check plant compliance with selected fire protection procedures. The audit identified a failure to comply with approved fire protection procedure 12 QHP 2270 FIRE .001, "Monthly and Semiannual Inspection of Portable Fire Extinguishers and the Servicing of Used Fire Extinguishers," Revision 7, dated November 20, 1986. Procedure FIRE .001, via Attachments, provides

for a monthly visual inspection of specified portable fire extinguishers, with documentation via a punch card located on the extinguisher and on either Attachment 7 or 8. When Surveillance No. 12-87-37 was performed on March 2, 1987, a total of 22 fire extinguishers were identified as not having been correctly checked in February 1987. Procedure FIRE.001 Attachments 7 and 8 had been completed, but in several cases the local punch cards indicated no check had actually been done. The individual assigned the task of completing the procedure subsequently admitted the subject checks were incomplete as of the audit date. In that compliance to fire protection program procedures is a requirement of Technical Specifications (both Units) 6.8.1.f, failure to complete the specified procedure checks described above is considered a violation of the referenced Technical Specifications (Violation 315/87017-01; 316/87017-01).

This inspection included a review of licensee corrective and preventive actions for this violation:

i) the incomplete checks were properly completed and documented;

ii) the individual who documented incomplete checks as complete was fired;

iii) controlled maps were developed to accurately identify the location of each extinguisher;

iv) Procedure FIRE.001 was revised to correct discrepancies noted in development of the maps, to include specification of the type of extinguisher at each location, and to provide for improved documentation;

v) several QC staff members were trained in the revised procedure and responsibility for completing the checks was assigned to an individual who can select trained inspectors to perform the inspection.

Based on these corrective and preventive actions, the inspector had no further questions on this matter and considers the item CLOSED.

c. (Closed) Open Item 315/86035-03: The wide range pressurizer water level instrument to the remote shutdown panel was valved out of service. This instrument serves to provide indication in support of safe remote plant shutdown requirements of 10 CFR 50 Appendix R. As indicted in Paragraph 8.b, appropriate administrative controls have been developed and implemented to maintain Appendix R components available for service as though pending Technical Specifications on these items had been issued.

One violation was identified which is considered closed. No 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, of Shift Technical Advisors, and of auxiliary equipment operators was observed and evaluated including procedure use and adherence, records and logs, communications, shift/duty turnover, and the 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 continued in a refueling/maintenance/test outage that began on June 27, 1987 (see Paragraph 11, "Outages").

b. Unit 2 tripped (see Paragraph 4, "Reactor Trips") at the beginning of this report period and commenced an eight day outage. After the outage the plant operated at a target power level of 80-percent except for a seven day period during which time power was reduced to 50-percent to facilitate turbine and feedwater pump condenser cleaning.

c. The inspectors observed Unit 2 control room operations while returning the Unit to service following the July 14 and July 22 reactor trips. In addition to use of and compliance to the startup procedures, the inspectors observed that additional licensed operators were on duty to assist the normal shift complement and that senior plant managers were on shift during both startups. The July 22 reactor startup was predominately performed on the 3:00 p.m. through 11:00 p.m. shift and involved additional operability testing of components that had failed and caused the reactor trip of July 14.

d. On August 7, while administrating operator requalification examinations, the Region III license examiners questioned the licensee's practice of moving the Axial Flux Difference (AFD) "wings" about the target flux difference. The examiner's interpretation of the Technical Specification indicated that the target flux difference can move within the AFD, but that the AFD "wings" are fixed.

On August 11, a conference call was held among Region III, American Electric Power Service Corporation licensing personnel, and Westinghouse (licensee vendor). At that time the licensee indicated that the Technical Specification, in combination with the core reload

analysis, permits movement of the AFD "wings" about the target band as practiced by the licensee. At the conclusion of the call, Region III did not identify an immediate safety concern regarding the current licensee practice. However, this item is considered open until additional reviews are performed by Region III reactor physics specialists. (Open Item 315/87017-02; 316/87017-02).

At the Exit Interview, plant management indicated that this item is being actively pursued by Safety and Licensing and that a number of conference calls were made.

e. Continuing control room "human factors" modifications were observed. Among the modifications observed were painting of the Unit 1 panels and the addition of zone coding to various control room meters.

The zone coding is an operator aid highlighting "normal" parameter range. Parameters that may need operator action should be more readily identifiable in the future. Description of the zone coding was provided in Operating Memo 87-87(T).

f. Weekly plant tours were conducted with senior licensee management. Areas toured included the Unit 1 upper and lower containments, auxiliary building, turbine building, screen house, and new construction areas within the protected area. During these tours no major concerns were identified, however minor problems (work area cleanliness, use of hard hats) were identified and resolved.

g. Facility tours included the Unit 2 steam generator temporary storage facility, currently under construction east of the main complex onsite.

One open item, and no violations, deviations, or unresolved items were identified.

4. Reactor Trips

a. Unit 2 tripped from 80-percent power on July 14, at 7:07 a.m. due to undervoltage on the reactor coolant pump busses. The undervoltage was attributed to a failure of the main generator automatic voltage regulator. The failure caused generator voltage to go low (exact value not known) for a time period greater than two seconds. This caused a reactor coolant pump bus undervoltage trip and auto start/load sequencing of the "CD" diesel generator. The "AB" diesel generator did not auto start; it was manually started, but not loaded. The "AB" generator did not auto start because the running voltage was higher for this train prior to the trip. All safety system responses to the trip were normal.

Post trip containment tours identified several leaking valves. The leaks did not approach/exceed regulatory limits, however, the licensee took the plant to cold shutdown to facilitate repairs while the main generator voltage regulator was fixed.

Unit 2 was made critical at 4:53 p.m. on July 22, 1987.

b. Unit 2 tripped from 19-percent power at 11:53 p.m. on July 22, because of a turbine/reactor trip caused by high-high water level in steam generator No. 24. The high-high water level occurred while water level control was in automatic and when the "W" (West) main feedwater pump differential pressure controller failed causing erratic steam generator water level control. Operators intervened, but were unable to prevent the reactor trip. Safety system response to this trip was entirely normal.

Following replacement of the failed differential pressure controller, the plant was made critical at 8:45 a.m. on July 23 and returned to power operation.

The inspector verified system responses and reviewed/discussed licensee evaluations relating to cause and corrective/preventive action. Further review and evaluation of each of these matters is anticipated in followup of Licensee Event Reports associated with the events.

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

5. 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.

During a tour of the auxiliary building, the inspector found an open, unattended access door (Door No. 434) from the turbine bay roof to the auxiliary building 650 ft. level. The door is normally locked and is not considered a normal access to the auxiliary building. The open door was discussed with the on duty Radiation Protection Supervisor who had the door locked shut.

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

6. 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.

Effective August 17, 1987, Mr. James (Jim) Droste assumed the duties of the Maintenance Superintendent, replacing Mr. John Allard who is on a special assignment. Mr. Droste's qualifications will be reviewed during a subsequent inspection.

The following activities were inspected:

a. Job Order JO 009736: Implement Design Change RFC-DC-01-2796, involving replacement of Unit 1 transformers containing polychlorinated biphenyl (PCB) contaminant.

b. Job Order JO 000776: Implement Design Change RFC-DC-12-2912, involving removal of low suction pressure trip feature on auxiliary feedwater pumps.

c. Job Order JO 715218: Investigate/repair steam leak underneath the Unit 1 turbine driven auxiliary feedwater pump (TDAFP) casing. During the inspection of this repair, the inspector noted continuing steam leakage back into the disassembled turbine casing from the casing drain system. The casing drains are routed to the miscellaneous Holdup Tank (MHT) along with numerous other steam traps/drains. The inspector questioned whether a check valve, loop seal or other isolation device was designed into the system to prevent potential serious steam leaks from other systems from feeding back into the TDAFP turbine. Apparently, there is no such isolation. This raises the question of potential adverse drain system conditions negatively affecting both TDAFPs (one in each Unit), perhaps in a manner not easily diagnosed and corrected. The inspection schedule did not permit resolution of the question, so the matter will be reviewed further in a future inspection. Pending completion of the review, this is an Open Item. (Open Item 315/87017-03; 316/87017-03).

d. Job Order JO 000549: Implement Design Change RFC-DC-12-1798, involving a TDAFP trip and throttle valve latching solenoid conversion. Relatching will become "energize to actuate" versus "de-energize", as described in part in Licensee Event Report LER 315/85048 corrective action.

e. Job Order JO 715218: Routine, periodic, (five year) preventive maintenance inspection and, if necessary, overhaul of the Unit 1 TDAFP turbine. The turbine was found in good condition, particularly when comparing surface corrosion to that found on the Unit 2 TDAFP turbine during the 1986 Unit 2 refueling outage; no bead blasting or resurfacing were needed.

f. Job Order JO 715160: Calibrate 23 RLS 282.

g. Job Order JO 015941: Trim one inch of material from a stanchion of a snubber.

One open item and no violations, deviations, or unresolved items were identified.

7. 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.

The following activities were inspected:

| | | |
|---|---|---|
| a. | 12 THP 6020 LAB.121 | Scott Air Pack monthly inventory check. |
| b. | 12 THP 4030 STP.211 | "Ice Basket Weighing". |
| c. | EDG 1AB 12 THP 4030 STP.217 | 24-hr test run of "AB" Diesel Generator. |
| d. | 1 THP 4030 STP.203 (Valves 1-SF-159 and 1-SF-160) | "Local Leak Rate Testing". |

During performance of this surveillance testing on the penetration sealed by Valves 1-SF-159 and 1-SF-160, it was determined the test volume would not hold pressure adequately. Cumulative leakage during the series of tests performed during the current outage exceeded the 0.6 L(A) specified limit as a consequence of these results. A Licensee Event Report (LER) is anticipated which will address cause and corrective actions.

Numerous previous LERs have addressed cumulative local leak test results in excess of 0.6 L(A). An Unresolved Item is currently open to determine whether previous corrective actions have been adequate; on whether the same penetrations have failed repeatedly or whether there has been some other pattern to the failures which has not been adequately addressed.

The current case (Valves 1-SF-159 and 1-SF-160) involves a normally locked pair of valves sealing the penetration for a line from the refueling water cavity to the purification pumps for cavity water cleanup. The test failed because the valves would not hold pressure

sufficiently that the leakage could be quantified. Some type of quantification of local leak rates is necessary, so a correct decision on scheduling of containment integrated leakrate testing can be made. The licensee's methods of bounding or calculating leakage not directly quantifiable via pressure retention will be made part of the existing Unresolved Item, as described in Paragraph 2.a.

e. 1 THP 6040 PER.353 "Irradiated Fuel Inspection Using Binoculars."

f. 1 OHP SP.061 "Unit 1 1987 Refueling Procedure" - Section 2.13 "Fuel Movements."

One aspect of the fuel moves involved movement of the new fuel from the storage vault to the spent fuel pool. While observing this activity, the inspector noticed that the crew had some difficulty removing the shield blocks from the storage vault. The procedure specified a three leg lifting rig with one leg adjustable by use of a turnbuckle. This configuration is acceptable, however replacement of the adjustable leg with a chain-fall may make minor leveling adjustment easier. This suggestion was made to the Refueling Supervisor for consideration during future revision of the procedure.

g. 1 OHP SP.061 "Reactor Vessel Stud Detentioning, Removal Section 2.6 and Cleaning."

h. 1 OHP 4030 STP.037 "Refueling Surveillance."

i. 12 MHP 4030 STP.016 "Manipulator Crane Load Test."

j. 12 MHP 4030 STP.026 "Performance Discharge Test of Plant 1AB, 1CD, 2AB, and 2CD 250 VDC Batteries."

k. 12 MHP 4030 STP.029 "Functional Test of Hydraulic Snubbers."

The inspector reviewed the licensee's program for expanding the inspection program when a snubber fails a functional test. The inspector found the assigned engineer was knowledgeable of the Technical Specifications and appropriately expanded the program.

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

8. 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.

a. On August 3, 1987, a portion of the North leg of the outside fire protection ring header was isolated due to a leak near fire hydrant No. 15. Special telephone and written notifications, as required by Technical Specifications, were made to NRC Region III. Subsequent investigation (excavation) showed the leak was actually from a potable water supply line running immediately adjacent to the hydrant area, so the fire protection ring header was returned to service the following day, August 4.

b. With Unit 1 in a refueling outage, Unit 1 Technical Specifications for equipment operability are much less restrictive than would be the case for Unit power operations. Selected Unit 1 equipment, however, is either normally cross-tied with Unit 2 or is capable of being cross-tied under emergency conditions. Postulated fires, in particular, may require use of alternate Unit equipment. This inspection included a review of licensee controls to maintain selected Unit 1 equipment available to support Unit 2 in case of a fire emergency.

Pending NRC approval of proposed Technical Specifications to accomplish the above purpose, the licensee has issued Plant Manager's Standing Order PMSO.095, "10 CFR 50 Appendix R Safe Shutdown Requirements". This inspection included a review of PMSO.095, Revision 3, dated April 28, 1987. The Standing Order is essentially an instruction to adhere to proposed Technical Specifications as though they were approved, and provides the proposed Specifications pages. The inspector found these instructions logical and consistent. They appeared complete including instruments and associated testing, but no detailed technical judgement of adequacy was attempted as that is the purview of the licensing review at NRC headquarters. Various personnel interviews and log reviews indicated the operating staff was aware of and understood the elements of the Standing Order.

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

9. Emergency Preparedness

a. The licensee declared a Unit 1 Emergency Plan "Unusual Event" at 8:20 a.m. on August 3, 1987, based on an administrative inoperability of both Emergency Diesel Generators. The Unit was shutdown with the reactor core unloaded and stored in the Spent Fuel Pool. Emergency power for spent fuel pool cooling was capable of being supplied by Unit 2.

Planned maintenance inspection of the Unit 1 Essential Service Water (ESW) intake system, utilizing a diver, necessitated racking out both ESW pumps. This in turn equates to inoperability of the associated diesels. There is a normally open ESW cross-tie between Unit 1 and Unit 2 which was in service, so both Unit 1 Diesel Generators were functional and were available for emergency service if needed.

The diesel generators and ESW system were returned to service prior to core reload.

b. The licensee declared an "Unusual Event" at 5:25 p.m. on July 23, when an individual wearing contaminated protective clothing was transported via the site ambulance to the local hospital. The individual apparently injured his back while working in the Unit 1 containment. Licensee Emergency Medical Technologists (EMTs) responded and provided first aid. The decision was made to leave the individual in some anti-contamination clothing during transport to the local hospital, to minimize risk of aggravating the injury during clothing removal.

Region III radiation specialists were onsite during the event and were assigned to follow up. Additional reviews are discussed in IE Inspection Report No. 50-315/87002(DRSS); No. 50-316/87002(DRSS).

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

10. 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.

a. The licensee reported to the NRC that a security force officer appeared asleep at his post at 12:30 p.m. on August 3, 1987. A security force supervisor made the finding. The officer had been posted at an open vital area as a compensatory measure. The security officer was relieved of duty pending completion of the licensee's investigation. The licensee has kept Region III security specialists advised of the investigation. This is an Open Item pending onsite review of the licensee's investigation by Region III security specialists. (Open Item 315/87017-04; 316/87017-04).

b. During tours of the plant, the inspector routinely verified that guards were cognizant of and implementing the post orders for their assigned post.

No violations, deviations or unresolved items were identified.
One open item was identified for future additional review.

11. Outages

a. Unit 1 remained in a refueling, test, maintenance and modification outage throughout the inspection period. The inspector regularly attended outage planning and progress meetings involving discussions and decisions on items to be added to, deleted from or otherwise altered as they related to the scope and content of scheduled activities. No problems were noted.

Unit 2 experienced a "forced outage" of about a week's duration as described in Paragraph 4.a above. The inspector considered the licensee's decision to take the Unit to cold shutdown to effect the identified repairs to be prudent and conservatively based.

b. The inspection included continuing review and observation of the Unit 1 refueling operations. Procedures covering the following attributes were verified:

i) receipt, inspection and storage of new fuel;

ii) periodic monitoring of spent fuel cooling prerequisites and contingency measures;

iii) handling and inspection of core internals; and,

iv) inspection of fuel to be reused.

Administrative controls for the refueling operations and for plant conditions prerequisite to such operations were reviewed. Specific attention was directed to shift manning and training/qualification of same; and to water level and decay heat removal administrative controls.

c. The inspector observed fuel handling activities on several shifts and from various locations. Specifically, activities were observed in the main control room, at the spent fuel storage pool, and in the reactor refueling cavity in containment. Implementation of administrative controls of the type discussed in 11.b above (staffing, procedure adherence, plant conditions) was selectively verified. Licensee independent verification of fuel bundle positioning and orientation was observed. The following procedures were utilized in part in this inspection:

| | | |
|---|---|---|
| i) | **1 OHP SP.061 | "Unit 1 1987 Refueling Procedure." |
| ii) | Special Instruction QCSI.046 | "Tagging of Tools During Unit 1 Refueling Outage - 1987." |

This procedure provides for a full-time Quality Control Administrative Compliance Coordinator to implement positive control to prevent tools, equipment, or other potentially "loose" materials from being dropped in the reactor cavity. Associated documentation (i.e., an accountability log) was maintained as stipulated in the procedure.

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

12. 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. During this inspection, the licensee's Quality Assurance organization performed, in concert with consultants retained for the purpose, an audit of the auxiliary feedwater system which was analogous to an NRC Safety System Functional Inspection (SSFI). The findings of this licensee-SSFI remain to be formally documented, but appropriate Condition Reports were initiated to address seven discrepancies identified by the review. In two cases, questions of operability of the Unit 2 auxiliary feedwater pump(s) were raised which the plant promptly resolved, as required, by declaring the subject pump(s) "inoperable" and implementing Technical Specification Action Requirements. These cases will be examined further in follow up to anticipated Licensee Event Reports.

b. Design Changes

This inspection included a review of selected changes to the plant design, to verify the changes were reviewed, approved and implemented in accordance with the controls of 10 CFR Part 50.59, Technical Specifications, and applicable QA/QC controls. As applicable, post-modification testing, procedure and drawing revisions and operator training were verified. In some cases, work-in-progress was observed.

| | | |
|---|---|---|
| i) | RFC-DC-12-2901 | Detailed Control Room Design Review (DCRDR) Modifications. |
| ii) | RFC-DC-12-2912 | Delete Auxiliary Feedwater Pump Low Suction Pressure Trips. |
| iii) | RFC-DC-12-2761 | Modify Diesel Generator Overspeed Trip. Device and Speed Indicator. |
| iv) | RFC-DC-12-1798 | Convert Turbine Driven Auxiliary Feedwater Pump Trip Relatch Solenoid. |
| v) | RFC-DC-01-2796 | Replace PCB-Cooled Transformers. |
| vi) | RFC-DC-12-2910 | Provide Additional Class IE 120VAC Distribution Cabinet. |

The inspection also included a review of the licensee's outstanding safety-related design change requests to enable a judgement whether the backlog is unacceptable. In this regard, the licensee has developed several activities to reduce the historic backlog and control future inputs. A pending revision to Procedure PMI-5040 "Design Change Control Program" will formalize new practices involving more front-end review and required justification prior to ideas becoming approved design change requests. Concerning the historic backlog, both in-house and contracted projects were recently completed to assemble, organize, review and file outstanding paperwork on physically complete work so the design changes can be removed from the "open" list. This reduced the apparent backlog by over 200 items just by the contractor's review program. New goals relating to timely completion of paperwork cover closing more packages each year than are opened, and closing every package within a year of its opening. As design changes mandated by outside requirements or by licensee commitments to outside agencies have been substantially completed, the licensee is assuming greater control over prioritizing and scheduling proposed changes to support internal goals or needs. Longer-range advance planning, to assign fiscal-year targets for completion of proposed changes currently in the backlog, has had the corollary consequence of identifying many proposals which no longer appear worthwhile. These have been cancelled, further reducing the backlog list.

The inspector concluded the licensee has taken effective actions in the past approximate year or 18 months to improve manageability of a sizeable, ambitious design change inventory.

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

13. 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 direct performance problems were noted.

NRC requalification examinations administered during the week of June 22, 1987, identified that nine of 17 operators examined (53%) failed the test. In accordance with the guidance of NUREG-1021, Region III determined that this requalification program performance was unsatisfactory.

Based on consultation with station management on July 15, 1987, a Confirmatory Action Letter (CAL) CAL-RIII-87-012 was issued on that date.

The Confirmatory Action Letter had the following line items:

a. Remove from licensed duties those RO's and SRO's who failed the NRC administered requalification exams until such time that these individuals successfully complete an NRC approved accelerated upgrade training program or an NRC administered examination. (Confirmatory Action Letter Item 315/87017-05; 316/87017-05).

Status: (Open) The Resident Inspector verified that the operators identified by the telephone conference on July 15, had been removed from licensed duties. The status of the individual's requalification program has not been verified.

At the exit interview, the licensee stated that four individuals had completed a retraining program and had been returned to duty.

b. Meet with the NRC at the Region III Office on or before July 24, 1987, to discuss your analysis for these examination results and present your plans for near and long term programmatic improvements and implementation schedule. (Confirmatory Action Letter Item 315/87017-06; 316/87017-06).

Status: (Closed) A management meeting was held in Region III on July 24, 1987, which addressed this line item.

No violations, deviations, unresolved or open items were identified. Two Confirmatory Action Letter action items relate to this area, one of which remains open while the other is closed.

14. Reportable Events

The inspector reviewed the following Licensee Event Reports (LERs) by means of direct observation, discussions with licensee personnel, and review of records. The review addressed compliance to reporting requirements and, as applicable, that immediate corrective action and appropriate action to prevent recurrence had been accomplished.

a. (Closed) LER 315/87008, Revision 0: The Unit 1 reactor tripped from 90-percent power due to overfeeding steam generator No. 12, causing a high level turbine trip/reactor trip. Steam generator level control was switched to "Manual" to enable conducting an instrument surveillance test, but it remained in "Automatic" due to a switch malfunction. Subsequent mis-operation of the feedwater flow selector switch to an intermediate position (neither Channel I nor II selected) caused the automatic controller to sense zero feedwater flow. Automatic response to increase feedpump speed and open the No. 12 feedwater control valve created the overfeeding and resultant high level trip. Trip response by all safety systems was normal. Minor instrument malfunctions not directly related to the trip were identified by the licensee in his study of trip response. These items, and the malfunctioning select switch, were repaired. The mis-operated switch was re-labeled to show the required degree of "throw" correctly, and a briefing memo to all operators identified this and other lessons learned from the event.

b. (Closed) LERs 315/87009, Revision 0 and 315/87010, Revision 0: Two zero-power reactor trip signals occurred in Unit 1 on consecutive days due to first stage turbine steam pressure indicating 10-percent power while a turbine trip signal was present. The cause of the elevated

steam pressure in the first instance was steam backleakage of main reheat steam through closed Valve 1-MMO-402 and through moisture separator reheater tube leaks to the high pressure turbine. With backleakage exceeding the capacity of available drains (several of which were isolated for maintenance) the pressure built up to the 10-percent power setpoint. The leaky Valve 1-MMO-442 was tightened to reduce the leakage. In the second instance, the high pressure turbine repressurized when a second valve (AMO-12) began leaking back following startup of auxiliary steam to the main feedwater pumps. Drains associated with this leak pathway were either closed (associated feed heater level already high) or inadequate to accommodate the rate of leakage, so repressurization occurred. All identified leaky valves and the moisture separator reheater tube leaks were repaired during the Unit refueling outage concurrent with this inspection.

c. (Closed) LER 315/87013, Revision 0: Ice buildup in ice condenser flow passages due to sublimation. This problem has been repetitive, though not chronic, as indicated by a few previous occurrences. The magnitude of ice buildup has remained within bounds analyzed to be acceptable from the perspective of safety performance of the ice condenser, though occasionally beyond Technical Specification values. The rate of buildup, which is a result of a naturally occurring phenomenon with water ice, has been shown by the record to be slow enough that the currently specified surveillance period is adequate to detect the problem and correct it before it becomes serious. Corrective actions in this case involved removal of the buildup by defrosting and scraping. Generic means to reduce the rate of sublimation and redeposition of ice are being sought through a cooperative effort with other utilities who have ice condenser units.

d. (Closed) LER 316/87004, Revision 0: Unit 2 tripped from 90-percent power on June 1, 1987, when the main condenser lost vacuum via an isolation valve leak, causing a turbine trip/reactor trip. A maintenance activity was in progress to remove a pipe flange. Several valves were closed to form an isolation boundary around the flange area. When the flange was removed, a leak past one of the valves drew building air into the main condenser, decreasing vacuum to the trip level. All safety systems responded normally. Minor secondary system failures not related to the initiation or course of the trip sequence were noted during the followup review. The components which failed were replaced.

e. (Closed) LER 316/87005, Revision 0: Unit 2 tripped from about 5-percent power during a reactor startup due to operator error allowing a steam generator level to fall to the trip setpoint. The feedwater system operator became involved in a phone discussion with an equipment operator in the plant concerning two blowdown system valves to be checked for proper operation (their position indication in the control room was suspect) as part of placing the blowdown system in service. He was distracted long enough that steam generator

level fell beyond recovery, despite a recovery attempt just before the trip. All automatic safety system responses to the trip were normal. Administrative discipline was implemented for the involved operator, and all other operators were appraised of the event - cause, course and consequences - via memorandum.

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

15. Region III Requests

a. On July 21, 1987, the inspector was requested to obtain specified information concerning containment penetration cooling assemblies manufactured or assembled by Tube Turns, Inc. as relates to service of the subject assemblies at D.C. Cook. The focus of the request was hydrostatic testing history, scope and results. The requested information was obtained and provided by July 23.

b. On August 19, 1987, the inspector was requested to obtain specified information relating to the design, monitoring, and performance history of the turbine driven auxiliary feedwater pump thrust bearing lubrication system. The requested information was obtained and provided by August 20.

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

16. 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 3.d, 6.c, and 10.a.

17. Confirmatory Action Items

Confirmatory Action Letters (CAL) are letters confirming a licensee's agreement to take certain actions to remove significant concerns and are issued as soon as practical after identification of a significant condition that requires corrective action by the licensee. CAL items identified during this inspection are discussed in Paragraph 13.

18. Management Interview

The inspectors met with licensee representatives (denoted in Paragraph 1) on August 24, 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.

The following items were specifically discussed:

a. the violation involving failure to complete required monthly field checks of portable fire extinguishers (Paragraph 2.b);

b. an Open Item associated with the licensee's methods for determining and administering axial flux difference target band (Paragraph 3.d);

c. an Open Item associated with auxiliary feedwater pump turbine casing drain system design (Paragraph 6.c);

d. an Open Item involving a security guard found inattentive to duty (Paragraph 10.a);

e. the status of implementation of Confirmatory Action Letter line items involving licensed operator requalification exam results (Paragraph 13).