

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report Nos. 50-456/89019(DRP); 50-457/89019(DRP)

Docket Nos. 50-456; 50-457

License Nos. NPF-72; NPF-77

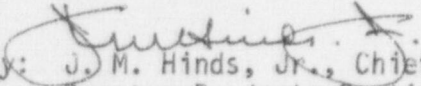
Licensee: Commonwealth Edison Company  
Post Office Box 767  
Chicago, IL 60690

Facility Name: Braidwood Station, Units 1 and 2

Inspection At: Braidwood Site, Braidwood, Illinois

Inspection Conducted: June 18 through July 29, 1989

Inspectors: T. M. Tongue  
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Reactor Projects Section 1A

AUG 04 1989  
Date

Inspection Summary

Inspection from June 18 through July 29, 1989 (Report Nos. 50-456/89019(DRP); 50-457/89019(DRP))

Areas Inspected: Routine, unannounced safety inspection by the resident inspectors of licensee action on previously identified items; licensee event report review; regional request; follow-up on TMI action items; dual unit reactor trip and unit 1 delta flux excursion; fuel handling; installation and testing of modifications; operational safety verification; engineered safety feature (ESF) systems; monthly maintenance observation; monthly surveillance observation; training effectiveness; report review; and meetings and other activities.

Results: No violations or deviations were identified.

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## DETAILS

### 1. Persons Contacted

#### Commonwealth Edison Company (CECo)

- \*R. E. Querio, Station Manager
- \*D. E. O'Brien, Technical Superintendent
- \*K. L. Kofron, Production Superintendent
- \*S. C. Hunsader, Nuclear Licensing Administrator
- \*G. R. Masters, Assistant Superintendent - Operations
- \*G. E. Groth, Braimwood Project Manager, PWR Projects Department
- \*R. J. Legner, Services Director
- \*M. E. Lohman, Assistant Superintendent - Maintenance
  - P. Smith, Operating Engineer - Unit 1
- \*W. B. McCue, Operating Engineer
- \*R. Yungk, Operating Engineer - Unit 2
  - J. Bowers, Operating Engineer - Unit 0
- \*R. D. Kyrouac, Quality Assurance Supervisor
- \*D. E. Cooper, Regulatory Assurance Supervisor
- \*R. C. Lemke, Technical Staff Supervisor
  - J. Gosnell, Quality Control Supervisor
  - D. Ambler, Radiation Protection Supervisor
  - F. Willaford, Security Administrator
- \*R. L. Byers, Assistant Superintendent - Work Planning and Startup
- \*L. W. Raney, Nuclear Safety Supervisor
  - W. McGee, Training Supervisor
- \*J. Kuchenbecker, Assistant Technical Staff Supervisor
- \*E. W. Carroll, Regulatory Assurance
- \*P. G. Holland, Regulatory Assurance
  - R. J. Ungeran, Master, Instrument Maintenance
  - L. Guthrie, Master, Mechanical Maintenance
  - J. Smith, Master, Electrical Maintenance
- \*D. J. Skoza, Project Engineer
- \*M. R. Trusheim, Shift Control Room Engineer
- \*B. Herbert, Nuclear Engineer
- \*J. Roth, Technical Staff
- \*T. M. Bandura, Quality Assurance
- \*F. A. Lesage, Quality Assurance
- \*E. E. Adams, Projects
- \*H. D. Pontious, Operations Staff
- \*R. Flessner, Operations Staff
- \*S. T. Shields, Quality Assurance
- \*P. Stanczak, Technical Staff
- \*R. Francoeur, Technical Staff
  - F. Trikur, Technical Staff
- \*M. Gorski, Nuclear Safety

\*Denotes those attending the exit interview conducted on July 28, 1989, and at other times throughout the inspection period.

The inspectors also talked with and interviewed several other licensee employees, including members of the technical and engineering staffs, reactor and auxiliary operators, shift engineers and foremen, and

electrical, mechanical and instrument maintenance personnel, and contract security personnel.

2. Licensee Action on Previously Identified Items

- a. Inspection Report 456/88032(DRP); 457/88032(DRP): In the management/plant meeting on December 6, 1988, the licensee committed to conduct an evaluation of instrument air piping solder joint quality.

The inspector reviewed the licensee's final report which provided a description of the overall evaluation. The evaluation consisted of constructing a number of solder/copper joints of varying amounts of solder and insertion, performing nondestructive examination with resistance and ultrasonic testing (UT) for solder bonding and depth, loading the samples to simulate the stresses involved up to and including joint/pipe failure, and developing an acceptance criteria for the piping installed in the plant.

The licensee then sampled thirty installed solder joints based on hanger placement, forces, etc., and conducted UT measurements on the joints. This sampling revealed that all installed joints were acceptable by at least two times the licensee's acceptance standard. In addition, soap bubble tests revealed several joints with minor leaks that were repaired and additional supports have or will be added in areas of overspan.

Following the review, the inspector had no further questions on this matter.

b. Violations

(Closed 457/88012-01: 2B SI pump failed to meet operability requirements as specified by Technical Specifications. The inspectors verified that all corrective actions had been implemented by the licensee. The event was incorporated into the licensed and non-licensed operator's training program as required reading. A training course on Communications was developed by the Training and Operating department to provide the operating staff with a clearer understanding of the concept of teamwork, their individual responsibilities as team members, and effective communication with team members. Also, Braidwood Operating Memorandum, No. 3-88 was developed and issued to provide the operating staff with more clearly defined guidance on effectively communicating orders and carrying out those orders. In addition, clarification had been provided with respect to what constitutes a component alteration, thereby, requiring that component to be logged in the "Abnormal Position" log. Based on this corrective action, this violation is considered closed.

(Closed) 456/88028-01A, B, D, H, & I; 457/88028-01A, B, D, H, & I: Missed or improperly performed surveillances. This notice of violation identified several instances of missed or improperly performed surveillances due to problems in scheduling, document

control, and procedures. This issue received escalated enforcement consideration. The licensee's corrective actions included adoption of a procedure by which non-routine surveillances are incorporated into the surveillance program; heightened management attention to surveillance completion; a policy under which any Technical Specification (TS) required surveillance that is not completed within 24 hours of its due date is reported at the Plan of the Day (POD) meeting; reformatting of shift/daily surveillance packages to preclude separation to facilitate their completion, and revision of the post-surveillance review process to have completed surveillance packages forwarded from the operating shift directly to the Operating Surveillance Coordinator. The resident inspector has been monitoring the licensee's surveillance process with the above mentioned corrective actions in place. The inspector has not identified any surveillances in the last six months that have exceeded their critical dates. The licensee's corrective actions for this issue appear to be adequate to preclude a recurrence of similarly missed or improperly performed surveillances. Based on the successful implementation of the licensee's corrective action, the inspector considers this item closed.

c. Information Notices

(Open) TI-2500/17: Inspection Guidance for Heat Shrinkable Tubing (HST). This TI provides guidance for evaluating licensee actions resulting from IE Information Notice (IN) 86-53, "Improper Installation of Heat Shrinkable Tubing." This IN concerned deficiencies identified with the licensee's program for installing electrical splices and terminations on safety-related equipment. The IN provided the names of several licensees who had experienced difficulties with the use of Raychem splices along with a list of those specific deficiencies experienced. The licensee reviewed the IN and determined that it was applicable to Braidwood. The licensee identified several cases where Raychem splices were improperly installed due to the failure of the electrical maintenance personnel to follow instructions provided by the vendor. Wyle Laboratories was contracted by the licensee to perform analyses of all possible configurations of Raychem splices, and the results indicated that all in-line Raychem splices would function under LOCA/Accident conditions.

In addition to reviewing the licensee's evaluation of IN 86-53, the inspector reviewed the following vendor source document and procedures to assure that the requirements specified by the vendor were incorporated into the applicable maintenance procedures and to verify that the procedures were "user friendly" and that they included the acceptance criteria:

EQ Binder, EQ-BB-120

BWHP 4006-08, Rev 2, Cable Terminating and Splicing

BWHP 4006-43, Rev. 0, Insulating and Environmentally Sealing  
Electrical Connections and Terminations Using  
Raychem Heat Shrinkable Products

The licensee has incorporated the vendor instructions into the Braidwood Station Maintenance Procedures to ensure proper installation of Raychem splices. The inspector also reviewed training records to verify that the proper maintenance personnel had received training on Raychem splices. Based on a visual field inspection, the inspectors could not adequately determine if previously installed Raychem splices of the following junction boxes/condulets were properly installed: IJB1860A for 1PT-514, and condulets for 1PT-534 and 1PT-524. Therefore, the inspectors will perform a more detailed visual inspection of the above junction boxes/condulets; and of those Raychem splices installed in accordance with BwHP 4006-43, Rev. 0, during the upcoming Unit 1 outage to better determine the adequacy of the installation of Raychem splices. This TI will remain open until the foregoing is complete.

No violations or deviations were identified.

### 3. Licensee Event Report (LER) Review (92702)

Through direct observations, discussions with licensee personnel, and review of records, the following event reports were reviewed to determine that reportability requirements were fulfilled, that immediate corrective action was accomplished, and that corrective action to prevent recurrence had been or would be accomplished in accordance with Technical Specifications:

(Closed) 456/87057-L1: Turbine Trip and Subsequent Reactor Trip During Monthly Turbine Valve Cycle Surveillance. This LER was initially discussed in Inspection Report 456/87044; 457/87045 and closed in Inspection Report 456/88022; 457/88022. This LER has been supplemented to update the status of corrective actions. Westinghouse has reviewed the data obtained from temporary instrumentation and concluded that the sensing line arrangement did not cause the turbine trip. Also, simulator testing of the Braidwood digital electro-hydraulic (DEH) system software has revealed no software problems. Thus, the cause of the event remains indeterminate, and no additional instances of control instability have been experienced. Braidwood is implementing Westinghouse-proposed changes to DEH system control parameters to decrease the likelihood of control instability, and Westinghouse will install diagnostic tapes in the DEH system during the next outage of suitable length. The licensee is tracking these actions; this LER is considered closed.

(Closed) 457/88024-L1: Steam Generator Hi-Hi Level Due to Incorrect Operation of High Pressure Cleanup Loop as a Result of a Design Deficiency in the Man-Machine Interface. The original LER was closed in Inspection Report 456/88032; 457/88032. The revision points out that the Unit 2 startup feedwater pump shares its recirculation line with main feedwater pump 2C, not with main feedwater pump 2B as indicated by piping and instrumentation drawing M-124 and the original LER. The drawing will be corrected. The drawing error had no effect on the event. This LER is considered closed.

(Closed) 457/88029-L1: Manual Reactor Trip and Reactor Coolant System Inventory Balance in Excess of Required Time Interval Due to Condensate Pump Suction Strainers Plugging. This supplemental LER clarifies that the prerequisites for a reactor coolant system inventory balance were invalidated by the reactor trip, and that the inventory balance was successfully performed following trip response activities after stable plant conditions had been established. This LER is considered closed.

In addition to the foregoing, the inspector reviewed the licensee's Deviation Reports (DVRs) generated during the inspection period. This was done in an effort to monitor the conditions related to plant or personnel performance, potential trends, etc. DVRs were also reviewed to ensure that they were generated appropriately and dispositioned in a manner consistent with the applicable procedures and the QA manual.

No violations or deviations were identified.

#### 4. Regional Request

##### Technical Specification Required Testing of Emergency Diesel Generators.

During the inspection period, Region III, Division of Reactor Projects requested information on Technical Specifications and how they relate to surveillance testing of the emergency diesel generators (EDGs). This issue was raised as a result of findings identified at Byron Station. The Technical Specification referenced is 4.8.1.1.2.f(6)(c), and the memo raised four questions on testing to be submitted to the licensee. The licensee provided the following responses:

- a. What EDG trips are active during manual/maintenance/test modes of operation?

Test Mode Trips:

- (1) Generator differential trip.
- (2) Overspeed trip.
- (3) Engine lube oil pressure low trip.
- (4) Turbocharger lube oil pressure low trip.
- (5) Main/connecting rod/generator outboard bearing high temperature trip.
- (6) Engine vibration trip.
- (7) Turbocharger thrust bearing failure trip.
- (8) High jacket water temperature trip.
- (9) Generator overload trip.

- (10) Generator ground fault trip.
- (11) Loss of field trip.
- (12) Reverse power trip.
- (13) Under frequency trip.
- (14) Crankcase high pressure trip.
- (15) Incomplete sequence trip.

- b. What EDG trips are active during ESF actuation/loss of offsite power (LOOP)/degraded voltage automatic starts of the EDGs?

EDG Emergency Mode Trips (LOOP with SI):

- (1) Generator Differential Trip.
- (2) Overspeed Trip.

NOTE: With LOOP only, no SI signal present, the following trip signals will trip the EDG's output breaker, but the EDG will continue to run.

- (9) Generator overload trip.
- (10) Generator ground fault trip.
- (11) Loss of field trip.
- (12) Reverse power trip.
- (13) Under frequency trip.

- c. If present in the design, is the bypass function tested?

The Test Mode only trips (#3 thru #15) are bypassed in the Emergency Mode. Trips #3 thru #14 are individually tested in Surveillance BwVS 8.1.1.2.f-9/10 to be bypassed in the Emergency Mode. Although the incomplete sequence trip bypass is not individually tested, the bypass circuit is the same as the other trips.

NOTE: Surveillance BwVS 8.1.1.2.f-9/10 also verifies that the trip signal to the EDG output breaker is bypassed (for these signals) with LOOP and SI signals both present.

- d. Are the exception trips, such as overspeed and generator differential, tested to ensure that they will perform their function?

The generator differential trip relay (SA-1) is tested by the operation analysis department (OAD); however, the repeater relays that actually trip the DG are not tested.

The overspeed trip is tested in Surveillance BwVS 900-6.

The foregoing information was transmitted to Region III on June 21, 1989 for evaluation by the Division of Reactor Safety.

No violations or deviations were identified.

5. Follow-up on TMI Action Items

II.K.2.2

This item is not applicable to Braidwood station. The issue is not addressed in the Byron or Braidwood SER. This issue is considered closed for Braidwood Units 1 and 2.

II.F.2.4 Instrumentation for Detection of Inadequate Core Cooling - Install Additional Instruments

On November 4, 1982, the Commission determined that an instrumentation system for the detection of inadequate core cooling (ICC) consisting of an upgraded subcooling margin monitor (SMM), core exit thermocouples (CETs), and a reactor coolant inventory tracking system (RCITS), is required for the operation of pressurized water reactor facilities.

NUREG-1002, Supplement 1, Section 4.4.7, documents that the NRC staff has reviewed the applicant's submittals for the SMM, CET, and RCITS and concludes that the ICC detection system design is acceptable and considers the item closed. The resident inspector staff at Braidwood has verified the installation of the ICC systems and, therefore, considers this item closed for Units 1 and 2.

II.E.1.1.2 Auxiliary Feedwater System (AFWS) Evaluation - Short and Long Term Modifications

The purpose of the AFWS reliability analysis, which was evaluated by the NRC staff, was to provide a means of comparison of the reliability of the AFWS with those of other plants and to identify the dominant contributors to AFWS unavailability so that action could be taken to fix or minimize the impact of their failure. The staff's review of the AFWS design and the associated numerical unavailability acceptance criteria identified that the system configuration is acceptable. Results of the staff's review are documented in Section 10.4.9 of NUREG-0876 and Supplement 2 of NUREG-0876.

The AFWS system has been installed and tested as designed. As the system design is changed, 10 CFR 50.59 reviews will be conducted, and possible Technical Specification revisions will be reviewed. This item is considered closed for Units 1 and 2.

No violations or deviations were identified.



## 6. Dual Unit Reactor Trip and Unit 1 Delta Flux Excursion

On July 18, 1989, both units tripped from Mode 1 operation. Unit 1 tripped from 75% power at 8:20 p.m., and Unit 2 tripped from 84% power at 8:26 p.m., apparently due to closely spaced lightning strikes. The lightning strikes caused overvoltage protection devices to trip all ten of Unit 1's and seven of Unit 2's rod drive control power supplies. Interrupting power to the rod control system of each unit caused enough rods to drop into the core to actuate the power range high negative flux rate trip in each case. For both units, all safety systems actuated as designed in response to the trips. Following the resetting of rod drive control system overvoltage protection and other trip recovery actions, Unit 1 was restarted on July 19, and Unit 2 was restarted on July 20.

On July 23, operators began a slow (0.1 MW/minute) ramp of Unit 1 from 50% to approximately 75% power. The uppower was completed on July 25, with delta flux and  $\Delta$ ave within acceptable limits. However, at the endpoint of the uppower, the continuing build-in of xenon increased the negative reactivity addition to the core, causing a decrease in  $\Delta$ ave to add positive reactivity. The effect of the  $\Delta$ ave decrease was greatest in the upper region of the core, promoting neutron flux generation there and tending to skew neutron flux distribution to the upper part of the core.

The operators could not dilute the boron concentration in the core to add positive reactivity because of the unavailability of radwaste collection tanks and the boron thermal regeneration system. With the unit past its end of life with a very small boron concentration, it is doubtful that dilution could have affected reactivity very much anyway. Therefore, in order to maintain  $\Delta$ ave acceptably close to  $\Delta$ ref (plus or minus 5°F), the operators were forced to reduce power. The power reduction caused an immediate additional xenon concentration increase and resultant  $\Delta$ ave decrease and delta flux increase. With delta flux now outside acceptable limits and penalty minutes building up, operators were forced to reduce power below 50%, in accordance with the action statements of the axial flux difference Technical Specification. The unit was maintained below 50% power until delta flux returned within its target values.

At the end of the inspection period, Unit 1 was again being slowly ramped up, this time with greater care by operators to ensure that xenon,  $\Delta$ ave, and delta flux effects were small enough that unit parameters could be maintained within existing limits without abrupt changes to the transient.

No violations or deviations were identified.

## 7. Fuel Handling

On several occasions during the inspection period, the inspectors witnessed the receipt and storage of new fuel within the fuel handling building. The inspectors verified the appropriate documentation of new fuel and that station procedures were followed in unloading, lifting, moving, lowering, and inspecting new fuel assemblies. Appropriate cleanliness controls were implemented. Efficient communications between fuel handlers, crane operators, radchem technicians, and the fuel

handling foremen facilitated fuel handling operations. A discovered fuel element flaw was thoroughly investigated and evaluated by the station's nuclear technical staff and a Westinghouse technical representative; the element was later returned to Westinghouse for rework.

No violations or deviations were identified.

8. Installation and Testing of Modifications (37828)

The purpose of this inspection was to ascertain that onsite activities and hardware associated with the installation of plant modifications which are not submitted for approval to the NRC are in conformance with the requirements of the Technical Specifications (TS), 10 CFR 50.59, and 10 CFR Part 50, Appendix B, Criterion III, Design Control.

Through discussions with licensee personnel and review of completed modification packages the inspector verified that the modification activities were performed by qualified workers in accordance with approved instructions and procedures, that lifted leads and jumpers were properly controlled, that quality assurance and quality control reviews were conducted and documented, that operational testing was performed as required, that required personnel training was completed, that document-required reviews concerning FSAR, operating license, TS and equipment environmental qualification changes were conducted, and that the performance of 10 CFR 50.59 reviews was documented as required. In addition, the inspector verified the identification of required changes to maintenance activities and procedures which were affected by the modifications. The modification packages reviewed were M20-1-094 and M20-2-017, and no deficiencies or violations were identified. At the time of this inspection there were no in progress modification activities to monitor. This module will remain open until this activity is completed.

No violations or deviations were identified.

9. Operational Safety Verification (71707)

During the inspection period, the inspectors verified that the facility was being operated in conformance with the licenses and regulatory requirements and that the licensee's management control system was effectively carrying out its responsibilities for safe operation. This was done on a sampling basis through routine direct observation of activities and equipment, tours of the facility, interviews and discussions with licensee personnel, independent verification of safety system status and limiting conditions for operation action requirements (LCOARs), corrective action, and review of facility records.

On a sampling basis the inspectors daily verified proper control room staffing and access, operator behavior, and coordination of plant activities with ongoing control room operations; verified operator adherence with the latest revisions of procedures for ongoing activities; verified operation as required by Technical Specifications (TS); including compliance with LCOARs, with emphasis on engineered safety features (ESF) and ESF electrical alignment and valve positions;

monitored instrumentation recorder traces and duplicate channels for abnormalities; verified status of various lit annunciators for operator understanding, off-normal condition, and corrective actions being taken; examined nuclear instrumentation (NI) and other protection channels for proper operability; reviewed radiation monitors and stack monitors for abnormal conditions; verified that onsite and offsite power was available as required; observed the frequency of plant/control room visits by the station manager, superintendents, assistant operations superintendent, and other managers; and observed the Safety Parameter Display System (SPDS) for operability.

During tours of accessible areas of the plant, the inspectors made note of general plant/equipment conditions, including control of activities in progress (maintenance/surveillance), observation of shift turnovers, general safety items, etc. The specific areas observed were:

◦ Engineered Safety Features (ESF) Systems

Accessible portions of ESF systems and components were inspected to verify: valve position for proper flow path; proper alignment of power supply breakers or fuses (if visible) for proper actuation on an initiating signal; proper removal of power from components if required by TS or FSAR; and the operability of support systems essential to system actuation or performance through observation of instrumentation and/or proper valve alignment. The inspectors also visually inspected components for leakage, proper lubrication, cooling water supply, etc.

◦ Radiation Protection Controls

The inspectors verified that workers were following health physics procedures for dosimetry, protective clothing, frisking, posting, etc., and randomly examined radiation protection instrumentation for use, operability, and calibration.

◦ Security

The inspectors, by sampling, verified that persons in the protected area (PA) displayed proper badges and had escorts if required; vital areas were kept locked and alarmed, or guards posted if required; and personnel and packages entering the PA received proper search and/or monitoring.

◦ Housekeeping and Plant Cleanliness

The inspectors monitored the status of housekeeping and plant cleanliness for fire protection, protection of safety-related equipment from intrusion of foreign matter and general protection.

The inspectors also monitored various records, such as tagouts, jumpers, shift logs and surveillances, daily orders, maintenance items, various chemistry and radiological sampling and analysis, third party review results, overtime records, QA and/or QC audit results and postings required per 10 CFR 19.11.

On several occasions during plant tours, the resident inspectors were accompanied by members of senior plant management. This practice has proven to be beneficial for both the licensee personnel and the resident inspectors with regard to exchanging information, concepts, thresholds on where action is needed, etc.

During the inspection period, the licensee provided responses to a number of inquiries resulting from observations in the plant. The following is a summary of those responses:

- ° Reference Inspection Report 456/89015(DRP); 457/89015(DRP).

Alarm response procedures were missing for the 1A auxiliary feedwater pump. The licensee conducted a sampling survey of ten (about 10%) alarm response (AR) books in the plant (outside of the main control room) and found two pages missing from one book and one page missing from a second book. Otherwise, the other AR books sampled were found to be acceptable.

In addition, the licensee is establishing a routine survey to monitor 25% of the AR books on a six-month frequency; this will result in an audit of all AR procedures on a two-year basis.

This response was found to be acceptable.

- ° A key ring containing auxiliary building operator round keys was lost. The inspectors inquired about the impact on operations, the ability of personnel to perform their jobs, and the potential for a loss of component control, i.e. locked valves.

The licensee confirmed that security locks were not affected. There did not seem to be an effect on operation, as all of the keys were replaced with spares, and system/component control is also maintained by numerous routine surveillances. At the close of the inspection period, the licensee was continuing efforts to relocate the lost key ring.

- ° On July 7, 1989, it was noted that Unit 2 exceeded 100% power during an approach to full power. Indicated power level was 101.6%, and a later calorimetric showed that the maximum power level was 101.2% for a period of less than two minutes, after which it was detected and corrected. Review by the inspectors showed that this was within the guidelines of an NRR memo dated August 22, 1980. In addition, the licensee published a Special Operating Order for guidance when operating near 100%, which approximates the guidance of the NRR memo. This is acceptable for the interim; however, the inspectors plan to discuss certain items in the order in the future with the licensee.

Other issues of lesser significance, such as a loose grounding cable on a motor-operated valve, a door lock defeated on a cage door to a room where potential radioactive material is sorted, and some specific minor housekeeping items, were discussed and resolved routinely.

No violations or deviations were identified.

10. Engineered Safety Feature (ESF) Systems (71710)

During the inspection, the inspectors selected accessible portions of several ESF systems to verify their status. Consideration was given to the plant mode, applicable Technical Specifications, Limiting Conditions for Operation Action Requirements (LCOARs), and other applicable requirements.

Various observations, where applicable, were made of hangers and supports; housekeeping; whether freeze protection, if required, was installed and operational; valve positions and conditions; potential ignition sources; major component labeling, lubrication, cooling, etc.; interior conditions of electrical breakers and control panels; whether instrumentation was properly installed and functioning and significant process parameter values were consistent with expected values; whether instrumentation was calibrated; whether necessary support systems were operational; and whether locally and remotely indicated breaker and valve positions agreed.

During the inspection, the following ESF systems and components were walked down:

Unit 1

1A Emergency Diesel Generator

1B Emergency Diesel Generator

Auxiliary Feedwater System

Unit 2

2A Emergency Diesel Generator

2B Emergency Diesel Generator

Auxiliary Feedwater System

No violations or deviations were identified.

11. Monthly Maintenance Observation (62703)

Station maintenance activities affecting the safety related systems and components listed below were observed/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 and restored to service; approvals were obtained prior to

initiating the work; activities were accomplished using approved procedures and were inspected as applicable; functional testing and/or calibrations were performed prior to returning components or systems to service; quality control records were maintained; activities were accomplished by qualified personnel; parts and materials used were properly certified; radiological controls were implemented; and fire prevention controls were implemented. Work requests were reviewed to determine the status of outstanding jobs and to assure that priority is assigned to safety-related equipment maintenance which may affect system performance.

The following maintenance activities were observed and reviewed:

Unit 0

Troubleshooting and resetting of damper OVC09Y (make-up intake from turbine building for control room ventilation train 0B)

Troubleshooting and repair of damper OVA072Y (flow control damper for charcoal booster fan 0F)

Unit 1

1B Auxiliary Feedwater Pump troubleshooting and repair for overcrank failure to start

Troubleshooting and repair of 1C Main Steam Isolation Valve limit switch

Reactor Coolant Pump Seal Injection Filter changeout

Unit 2

Troubleshooting/repair of power range channel N41

Repair of power supply for hot leg wide range RTD

The inspectors monitored the licensee's work in progress and verified that it was being performed in accordance with proper procedures, and approved work packages, that 10 CFR 50.59 and other applicable drawing updates were made and/or planned, and that operator training was conducted in a reasonable period of time.

No violations or deviations were identified.

12. Monthly Surveillance Observation (61726)

The inspectors observed surveillance testing required by Technical Specifications during the inspection period 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 results conformed with Technical Specifications and

procedure requirements and were reviewed by personnel other than the individual directing the test, and that any deficiencies identified during the testing were properly reviewed and resolved by appropriate management personnel.

The inspectors also witnessed portions of the following test activities:

Unit 0

Security computer outage for surveillance of power supplies and equipment

Unit 1

BwVS 3.1.1-5, Incore-Excore Axial Flux Quarterly Calibration

BwOS 3.2.1-8/6, Unit 1 ESFAS Instrumentation Slave Relay Surveillance (Train B, Automatic Safety Injection K611)

BwOS 8.1.1.2a-2, Unit 1, 1B Diesel Generator Operability Monthly (Staggered) and Semi-Annual (Staggered) Surveillance

Special Test SPP 89-6, Autostart Verification of the 1A Auxiliary Feedwater Pump from the Remote Shutdown Panel

Unit 2

1BwOS 8.1.1.2a, Rev. 1, 2B Diesel Generator Operability (Staggered) and Semi-Annual (Staggered) Surveillance

BwVS 0.5-3, SX-1, Rev. 4, ASME Surveillance Requirements for Essential Service Water Pumps - for 2B SX pump

BwVS 0.5-2.SI.2, Safety Injection System Check Valve Stroke Test

During this inspection period, the Byron Senior Resident Inspector noted that periodic surveillances of the actuating circuitry for the auxiliary feedwater pumps and other safety-related pumps did not test the circuitry with the pumps under local control at the remote shutdown panels (RSPs). When the pumps are locally controlled, actuating signals are sent through different sets of closed contacts from those made up when the pumps are remotely controlled from control room panels. This concern also applied to Braidwood surveillance tests. A Braidwood review of preoperational testing determined that the actuating circuitry for all pumps in question had been tested with the pumps under local control, with the exception of the 1A auxiliary feedwater (AFW) pump.

On June 23, 1989, the licensee performed a special test to verify automatic starting of the 1A AFW pump with the pump under local control at the Unit 1 RSP. With the pump breaker in the "breaker test" position to prevent an actual pump start, simulated loss of offsite power and safety injection signals were imposed on the actuating circuitry. A "pump run" indication resulted in each case, verifying the continuity of the local contacts.

During a conference call on June 22, 1989, the licensee committed to an engineering review for Byron and Braidwood which would address the need for periodic testing of pump actuation with pumps locally controlled.

No violations or deviations were identified.

13. Training Effectiveness (41400, 41701)

The effectiveness of training programs for licensed and non-licensed personnel was reviewed by the inspectors during the witnessing of the licensee's performance of routine surveillance, maintenance, and operational activities and during the review of the licensee's response to events which occurred during the inspection period. Personnel appeared to be knowledgeable of the tasks being performed, and nothing was observed which indicated any ineffectiveness of training.

No violations or deviations were identified.

14. Report Review

During the inspection period, the inspector reviewed the licensee's Monthly Performance Report for June 1989. The inspector confirmed that the information provided met the requirements of Technical Specification 6.9.1.8 and Regulatory Guide 1.16.

The inspector also reviewed the licensee's Monthly Plant Status Reports for May and June 1989.

No violations or deviations were identified.

15. Meetings and Other Activities (30702)

Management/Plant Status Meeting

A meeting was held on July 28, 1989 between the Station Manager, and Mr. J. M. Hinds, Chief, Division of Reactor Projects Section 1A, and members of their staffs. The purpose of the meeting was for the licensee to provide an update on the status of Units 1 and 2, to discuss improving trends in reportable events, to discuss recent reactor trips, and to discuss the preparations for the upcoming Unit 1 refueling outage. The NRC identified issues such as minor deficiencies of control room logs and various items identified during plant inspection tours. In addition, the recent enforcement conference corrective action results were addressed. There was also an exchange of information on issues of interest to the NRC and the licensee.

No violations or deviations were identified.

16. Exit Interview (30703)

The inspectors met with the licensee representatives denoted in paragraph 1 during the inspection period and at the conclusion of the inspection on July 28, 1989. The inspectors summarized the scope and results of the inspection and discussed the likely content of this inspection report. The licensee acknowledged the information and did not indicate that any of the information disclosed during the inspection could be considered proprietary in nature.