

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Report Nos. 50-454/88002(DRP); 50-455/88002(DRP)

Docket Nos. 50-454; 50-455

License Nos. NPF-37; NPF-66

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

Facility Name: Byron Station, Units 1 and 2

Inspection At: Byron Station, Byron, Illinois

Inspection Conducted: January 1 - February 11, 1988

Inspectors: P. G. Brochman  
N. V. Gilles

Approved By: *J. M. Hinds, Jr.*, Chief  
Reactor Projects Section 1A

02-24-88  
Date

Inspection Summary

Inspection from January 1 - February 11, 1988 (Report Nos. 50-454/88002(DRP);  
50-455/88002(DRP))

Areas Inspected: Routine, unannounced safety inspection by the resident inspectors of licensee action on previous inspection findings; licensee event reports; operations summary; training; surveillance; maintenance; operational safety and engineered safety features (ESF) system walkdown; information notice followup; meetings with local public officials; allegation followup; and management meetings.

Results: Of the 10 areas inspected, no violations or deviations were identified in 8 areas. In the two remaining areas, 1 violation was identified for which a Notice of Violation was issued (failure to maintain environmental qualification for a safety-related component - paragraph 8), and a second violation was identified for which, in accordance with 10 CFR 2, Appendix C, Section V.G.1, a Notice of Violation was not issued (failure to properly calibrate a radiation detector - paragraph 3).

DETAILS

1. Person Contacted

Commonwealth Edison Company

R. Querio, Station Manager  
\*R. Pleniewicz, Production Superintendent  
\*R. Ward, Services Superintendent  
\*W. Burkamper, Quality Assurance Superintendent  
\*T. Joyce, Assistant Superintendent, Operating  
\*G. Schwartz, Assistant Superintendent, Maintenance  
\*L. Sues, Assistant Superintendent, Technical Services  
D. St. Clair, Assistant Superintendent, Work Planning  
T. Higgins, Operating Engineer, Unit 0  
J. Schrock, Operating Engineer, Unit 1  
D. Brindle, Operating Engineer, Unit 2  
T. Didier, Operating Engineer, Rad-Waste  
\*P. Johnson, Master Instrument Mechanic  
M. Snow, Regulatory Assurance Supervisor  
R. Flahive, Technical Staff Supervisor  
S. Barret, Radiation/Chemistry Supervisor  
P. O'Neil, Quality Control Supervisor  
\*G. Stauffer, Assistant Regulatory Assurance Supervisor  
\*W. Walter, Assistant Technical Staff Supervisor  
W. Pirnat, Regulatory Assurance Staff  
\*E. Zittle, Regulatory Assurance Staff  
\*D. Robinson, Nuclear Safety, Onsite  
\*A. Britton, Quality Assurance Inspector

The inspector also contacted and interviewed other licensee and contractor personnel during the course of this inspection.

\* Denotes those present during the exit interview on February 11, 1988.

2. Action on Previous Inspection Findings (92701 & 92702)

- a. (Closed) Open Item (455/86040-03(DRP)): Locked valves not indicated on piping and instrumentation drawing (P&ID) and valve lineup sheets. The inspector reviewed procedure BOP D0-M2 and verified that the valve lineup sheets indicate the correct locked position for these valves. The inspector also reviewed procedure 2BOS XLE-R1, "Locked Equipment 18 Month Surveillance," and verified that the surveillance lists the correct locked position for the valves. Since the station procedures control and document the correct valve positions, the licensee does not plan to change the P&ID to reflect the locked status. Based on this review, this item is considered closed.
- b. (Closed) Open Item (455/86041-04(DRS)): Review of retest R-2058. The inspector reviewed retest R-2058 for the Unit 2 auxiliary

feedwater (AF) system and verified that the new flow control orifices did function properly. The inspector verified that the AF system will deliver the minimum flow to the steam generators and that each flow restricting orifice limits flow to a faulted steam generator. The steam generator flow control (AF005) valves did not adequately control flow over their entire operating range. The station has submitted a request to the licensee's pressurized water reactor (PWR) engineering group to look at possible modifications to the AF005 valves to improve their controllability. This request is being tracked by Action Item Record (AIR) 6-86-2214, with a scheduled completion date of June 1989. Based on the retest results, this item is considered closed.

- c. (Closed) Open Item (455/87003-01(DRS)): Simultaneous starts of Unit 2 AF pumps after modifications to the AF system. The inspector reviewed the sequence-of-events printout for a reactor trip on June 29, 1987, and verified that both the 2A and 2B AF pumps started simultaneously and did not trip on low suction pressure. Based on this review, this item is considered closed.
- d. (Closed) Unresolved Item (454/87020-02(DRP)): Valve lineup not revised after 1CS045 position changed by modification. The inspector reviewed procedure BOP CS-M1 and verified that the valve lineup reflects the correct position of valve 1CS045. The inspector also reviewed procedure 1BOS XLE-R1, "Locked Equipment 18 Month Surveillance," and verified that the surveillance lists the correct position for valve 1CS045. In addition, the licensee has instituted a requirement that all procedures associated with a particular modification have temporary changes implemented prior to completion of the modification. Based on this review, this item is considered closed.
- e. (Closed) Violation (455/87038-02(DRP)): Failure to perform a post-maintenance test on valve 2MS101C. The inspector reviewed the licensee's response to verify that the corrective actions had been implemented as stated. The inspector reviewed the changes made to form BAP 1600-T11 to verify that it requires an appropriate level of review to determine the necessary post-maintenance testing requirements for all maintenance activities performed at Byron. The inspector interviewed licensed operators to verify that they understand and know how to implement this new form. Based on this review, this item is considered closed.
- f. (Closed) Violation (454/87041-01(DRP); 455/87038-03(DRP)): Failure to train a technical staff engineer on the use of an ultrasonic flowmeter used on safety-related surveillances and problems with the overall training program for technical staff engineers. The inspector reviewed the licensee's response to verify that the corrective actions had been implemented as stated. The inspector verified that refresher training has been given to all technical staff personnel. The licensee is revising all of the procedures which utilize an ultrasonic flowmeter to ensure that caution statements and notes are included on the operation of the

flowmeters. The licensee is also revising the training matrix for technical staff engineers. Based on these actions, this item is considered closed. The inspectors will continue to closely monitor the licensee's performance in this area.

No violations or deviations were identified.

3. Licensee Event Report (LER) Followup (92700)

(Closed) LER (454/87023-LL): Through direct observation, discussions with licensee personnel, and review of records, the following LER was reviewed to determine that the reportability requirements were fulfilled, that immediate corrective action was accomplished, and that corrective action to prevent recurrence had been accomplished in accordance with Technical Specifications.

<u>LER No.</u>	<u>Title</u>
454/87023	Control Room ventilation radiation monitor inoperable due to improper calibration resulting from a personnel error.

This LER describes events on December 28, 1987, and January 5, 1988, in which three radiation monitors were calibrated using an incorrect radioactive source. The error was discovered by a licensee instrument mechanic on January 6, 1988, when one of the sources was being checked out for a different job. The activity level of source number 125 is 0.2 micro curies, and that of source number 126 is 0.15 micro curies.

The licensee's investigation determined that sources 125 and 126 had been checked out on December 16 and 17, 1987, and were apparently switched when returned to their storage containers. The three monitors affected by this error were ORE-PRO34A and ORE-PRO34B, "Main Control Room Outside Air Intake Particulate and Gaseous Radiation Detectors," and 2RE-PRO30A, "Auxiliary Building Vent Stack Wide Range Noble Gas Detector."

A review of the calibration records determined that detector ORE-PRO34B exceeded Technical Specification requirements. Technical Specification 3.3.3.1, Table 3.3-6, functional unit 5 requires ORE-PRO34B to have an alarm setpoint of less than 2 mR/hr. The actual alarm setpoint was 2.07 mR/hr. With ORE-PRO34B above its setpoint the control room ventilation system should have been isolated and placed in the emergency makeup mode. ORE-PRO34B was inoperable for 9 days and 5 1/2 hours.

As corrective actions the affected detectors were recalibrated, the involved individuals were counseled, and revisions have been made to the source identification and issuance procedures.

The failure to calibrate the alarm setpoint for ORE-PRO34B to less than 2 mR/hr and to isolate the control room ventilation and place it in the emergency makeup mode is a violation of Technical Specification 3.3.3.1 (454/88002-01(DRP); 455/88002-01(DRP)). However, this violation meets the tests of 10 CFR 2, Appendix C, Section V.G.1; consequently, no Notice of Violation will be issued, and this matter is considered closed.

One violation and no deviations were identified.

4. Summary of Operations

Unit 1 operated at power levels up to 98% for the entire report period. Unit 2 operated at power levels up to 100% for the entire report period.

5. Training (41400 & 41701)

The effectiveness of training programs for licensed and unlicensed personnel was reviewed by the inspectors during witnessing of the licensee's performance of routine surveillance, maintenance, and operational activities and during review of the licensee's responses to events which occurred during January and February 1988. Personnel appeared to be knowledgeable of the tasks being performed, and nothing was observed which indicated ineffective training.

No violations or deviations were identified.

6. Monthly Surveillance Observation (61726)

Station surveillance activities of the safety-related systems and components listed below were observed or reviewed to ascertain that they were conducted in accordance with approved procedures and in conformance with Technical Specifications.

Loose parts monitoring system alarm functional test - Unit 2  
Solid state protection system functional test - train 2A  
Reactor trip breaker 2A undervoltage and shunt trip device tests  
1C steam generator pressure channel P-536 functional test

The following items were considered during this review: the limiting conditions for operation were met while affected components or systems were removed from and restored to service; approvals were obtained prior to initiating the testing; testing was accomplished in accordance with approved procedures; test instrumentation was within its calibration interval; testing was accomplished by qualified personnel; test results conformed with Technical Specifications and procedural requirements and were reviewed by personnel other than the individual directing the test; and any deficiencies identified during the testing were properly documented, reviewed, and resolved by appropriate management personnel.

No violations or deviations were identified.

7. Monthly Maintenance Observation (62703)

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

Troubleshooting of the rod control Tave - Tref mismatch circuit  
Inspection of solenoids for FW009 valves

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.

No violations or deviations were identified.

8. Operational Safety Verification and Engineered Safety Features System Walkdown (71707, 71709, 71710, & 71881)

The inspectors observed control room operation, reviewed applicable logs and conducted discussions with control room operators during January and February 1988. During these discussions and observations, the inspectors ascertained that the operators were alert, cognizant of plant conditions, and attentive to changes in those conditions, and that they took prompt action when appropriate. The inspectors verified the operability of selected emergency systems, reviewed tagout records, and verified the proper return to service of affected components. Tours of the auxiliary, fuel-handling, rad-waste, and turbine buildings were conducted to observe plant equipment conditions, including potential fire hazards, fluid leaks, and excessive vibrations, and to verify that maintenance requests had been initiated for equipment in need of maintenance.

On January 28, 1988, during a tour of the Unit 1 auxiliary building, the inspector discovered that the protective covers for the zero and span adjusting screws for refueling water storage tank level transmitter 1LT-0932 were not installed. The protective covers are part of the environmental qualification (EQ) boundary for the level transmitter. The licensee declared the transmitter inoperable and entered Technical Specification action statement 3.3.2.a. The transmitter was recalibrated and was found to be 0.75% out of tolerance. The licensee interviewed the instrument mechanic (IM) who last performed work on the transmitter on December 23, 1987. The IM stated that he had reinstalled the zero and span covers when he completed the surveillance on December 23, 1987. The inspector reviewed the test data package for December 23, 1987, and surveillance procedure B1S 3.3.6-200 to verify that instructions are provided to reinstall the protective covers after calibrating the transmitter. While there is no explicit signoff for reinstallation of the covers, the procedure implicitly directs that the covers be reinstalled.

10 CFR 50.49 requires that each licensee establish a program to maintain the environmental qualification of safety-related (class 1-E) electrical equipment which mitigates the consequences of an accident. The Byron

Safety Related Component List specifies that level transmitter 1LT-0932 is a class 1-E component and requires qualification for a harsh environment. Level transmitter 1LT-0932 is a Barton Transmitter, Model 752, and is utilized by control room operators during a safety injection to mitigate a loss of coolant accident. Equipment Qualification Binder number ESE-4A requires that Barton Transmitters, Model 752, have their zero and span adjusting screw protective covers installed to be environmentally qualified.

The failure to maintain 1LT-0932 (Barton Model 752) in its qualified configuration is a violation of 10 CFR 50.49 (454/88002-02(DRP)).

The inspectors verified by observation and direct interviews that the physical security plan was being implemented in accordance with the station security plan.

The inspectors observed plant housekeeping/cleanliness conditions and verified implementation of radiation protection controls. The inspectors also witnessed portions of the radioactive waste system controls associated with rad-waste shipments and barreling. During January and February 1988, the inspectors walked down the accessible portions of the 2B auxiliary feedwater system to verify operability.

The observed facility operations were verified to be in accordance with the requirements established under Technical Specifications, 10 CFR, and administrative procedures.

One violation and no deviations were identified.

#### 9. Followup of NRC Information Notices (92701)

- a. (Closed) Information Notice (IN)87-23: Loss of decay heat removal during low reactor coolant level operation. This IN concerned the loss of decay heat removal capability at pressurized water reactors resulting from the loss of residual heat removal (RHR) pump suction during plant operations with low reactor coolant levels. The licensee reviewed the IN and determined that it was applicable to Byron. The licensee has implemented a modification to Unit 1 to provide a permanent, hard-piped reactor coolant system (RCS) level indication. The new instrumentation is designed to provide narrow-range level indication for protection of the RHR pumps in modes 5 and 6. The level system includes indication on the Main Control Board with alarms. The Unit 2 modification is expected to be installed during the first refueling outage in early 1988.

In addition, the licensee's abnormal operating procedure, "Loss of RH cooling," contains a caution to the operators to verify that the cause of the failure of the first train of RHR will not fail the redundant train, prior to starting the redundant train.

Finally, the licensee's licensed operator training program contains material on cavitation and vortexing in the RHR system, the possible causes for loss of RHR cooling, and the options for cooling the RCS during loss of RHR cooling. Based on these actions, this IN is considered closed.

- b. (Closed) IN 87-24: Operational experience involving losses of electrical inverters. This IN concerned electrical inverter losses that have led to unplanned plant transients and/or inoperability or improper functioning of safety-related and other important plant equipment. The licensee reviewed this IN and determined that it was applicable to Byron. Byron has experienced inverter failures, and ventilation to the inverter cabinets has been increased to help prevent the failures. The licensee has also established a special task force to investigate the problems and address the concerns of this IN. The task force has been working on a number of items in this area. One is the incorporation of a Westinghouse Technical Bulletin on inverter maintenance and, specifically, a new inverter tuning procedure. The licensee also has plans to install cooling fans on both units during their next refueling outages to improve inverter reliability. Finally, the licensee's long-term plans involve replacing the inverters with a new brand for which parts would be more easily available and for which servicing would be easier. Based on these actions, this IN is considered closed.
- c. (Closed) IN 87-34: Single failures in auxiliary feedwater systems. This IN concerned potential single failures of auxiliary feedwater pump start and protective pump trip circuitry that could cause partial or complete loss of the capability to supply auxiliary feedwater, in conflict with the design basis. The licensee reviewed this IN and determined that it was not applicable to Byron. Byron's two auxiliary feedwater pumps are isolated electrically and physically. There are no common relays used in the pump start or trip circuits, and each pump has a separate electrical power source, with the diesel-driven pump having its own set of batteries. Based on this information, this IN is considered closed.
- d. (Closed) IN 87-42: Diesel generator fuse contacts. This IN concerned potential failures of emergency electrical power supplies resulting from misalignment and/or degradation of fuse contacts. The licensee has reviewed this IN and determined that it is not applicable to Byron. The IN discussed previous problems with components manufactured by Allis-Chalmers and by General Electric. Byron has Westinghouse switchgear and potential transformer fuses. The Westinghouse switchgear has a different style of contact which has not experienced this type of problem. Byron has not experienced any problems of the nature discussed in this IN. Based on this information, this IN is considered closed.
- e. (Closed) Information Notice (IN) 87-44: Thimble Tube Thinning in Westinghouse Reactors. The IN describes a potential problem resulting from thimble tube thinning in Westinghouse reactors which could lead to the development of a non-isolable leak and a corresponding loss of reactor coolant. The licensee determined that the potential for this type of thimble tube wear does exist at Byron, but that problems like those discussed in the IN would not be

expected to occur until later in the life of the Byron units. Based on this conclusion, an inspection program is being developed to perform eddy current testing of thimble tubes. Zion Station is taking the lead for the initial try-out of this testing. This testing is scheduled for the early 1990's since a seal table modification has just been completed at Zion which has changed the wear surface of the thimble tubes. This modification is also planned for Byron Unit 1 during the next refueling outage. Based on this information, this IN is considered closed.

No violations or deviations were identified.

10. Meeting with Local Public Officials (94600)

On January 20, 1988, Messrs. R. M. Lickus, Chief, State and Government Affairs; W. L. Forney, Chief, Reactor Projects Branch 1; J. M. Hinds, Jr., Chief, Reactor Projects Section 1A; and the resident inspectors met publicly at the Byron cultural center with local public officials from the area surrounding Byron station. This meeting was held to review the purpose of the resident inspector program and to introduce the new NRC resident inspectors who are assigned to Byron station. The recent performance of Byron was also discussed.

11. Allegation Followup (99014)

On February 10, 1988, the senior resident inspector was informed by licensee management of a potential wrongdoing issue, which involved compensatory fire watch personnel not inspecting all of the areas on their specified routes. The areas in question are located from the 451' to 475' elevations of the auxiliary building. The equipment located in these areas is used for heating, cooling, ventilating, and filtering air in the auxiliary building and Unit 1 and 2 containments. The individuals involved in this issue are employed by Wackenhut (the site security contractor). Following a review of computer records, the licensee identified 48 individuals for further investigation. The security access for these individuals to Byron station was suspended pending completion of the licensee's investigation. Region III dispatched an inspector on February 11, 1988, to perform a review of the licensee's action. Findings of that inspection will be documented in inspection reports 454/88004(DRSS); 455/88005(DRSS).

12. Management Meetings (30702)

On January 29, 1988, Mr. A. B. Davis, Region III Administrator, members of his staff, and the NRC resident inspectors met with licensee executives, managers and supervisors in a public meeting at Byron station. This meeting was held to review the licensee's performance during SALP 7 and to discuss the NRC's evaluation of this performance.

13. Violations for which A "Notice of Violation" Will Not Be Issued

The NRC uses the Notice of Violation as a standard method for formalizing the existence of a violation of a legally binding requirement. However, because the NRC wants to encourage and support a licensee's initiatives for self-identification and correction of problems, the NRC will not

generally issue a Notice of Violation for a violation that meets the tests of 10 CFR 2, Appendix C, Section V.G.1. These tests are: 1) the violation was identified by the licensee; 2) the violation would be categorized as Severity Level IV or V; 3) the violation was reported to the NRC, if required; 4) the violation will be corrected, including measures to prevent recurrence, within a reasonable time period; and 5) it was not a violation that could reasonably be expected to have been prevented by the licensee's corrective action for a previous violation.

A violation of regulatory requirements identified during the inspection for which a Notice of Violation will not be issued is discussed in paragraph 3.

14. Exit Interview (30703)

The inspectors met with the licensee representatives denoted in paragraph 1 at the conclusion of the inspection on February 11, 1988. The inspectors summarized the purpose and scope of the inspection and the findings. The inspectors also discussed the likely informational content of the inspection report, with regard to documents or processes reviewed by the inspectors during the inspection. The licensee did not identify any such documents or processes as proprietary.