U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-454/86021(DRP)

Docket No. 50-454

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

Facility Name: Byron Station, Unit 1

Inspection At: Byron Station, Byron, IL

Inspection Conducted: May 31 through June 30, 1986

Inspectors: J. M. Hinus, Jr. P. G. Brochman L. N. Olshan J. A. Malloy

Approved By: W. L. Forney Chief Reactor Projects Section 1A

7/15/86

Inspection Summary

Inspection on May 31 through June 30, 1986 (Report No. 50-454/86021(DRP)) Areas Inspected: Routine unannounced safety inspection by the resident inspectors and a headquarters inspector of licensee action on previous inspection findings; IEBs; SERs; LERs; operations summary; surveillance; maintenance; operational safety and ESF walkdown; headquarters and Region III requests; event followup; licensee actions concerning suspected drug use; management meetings; and other activities.

Results: Of the 11 areas inspected, no violations or deviations were identified in 10 areas; two violations were identified in the remaining area; however, in accordance with 10 CFR 2, Appendix C, Section V.A., a Notice of Violation was not issued (See Paragraph 5.b). No items were identified which could impact the public health and safety.

8607210143 860715 PDR ADOCK 05000454 0 PDR License No. NPF-37

DETAILS

1. Persons Contacted

Commonwealth Edison Company

#T. Maiman, Manager of Projects #*R. Querio, Station Manager *R. Pleniewicz, Production Superintendent #*R. Ward, Services Superintendent #*L. Sues, Assistant Superintendent, Operating G. Schwartz, Assistant Superintendent, Maintenance *T. Joyce, Assistant Superintendent, Technical Services #D. St.Clair, Assistant Superintendent, Work Planning W. Blythe, Operating Engineer, Unit O T. Tulon, Operating Engineer, Unit 1 #D. Brindle, Operating Engineer, Unit 2 #J. Schrock, Operating Engineer, Rad-Waste #*A. Chernick, Compliance Supervisor #*F. Hornbeck, Technical Staff Supervisor #*R. Flahive, Radiation/Chemistry Jupervisor #*J. Pausche, Regulatory Assurance #*W. Burkamper, Quality Assurance Supervisor Operator #B. Erickson, Master Mechanic #K. Weaver, Station H. P. #A. Britton, Quality Assurance Inspector #*E. Zittle, Regulatory Assurance Staff #K. Yates, Nuclear Safety Staff #W. Scheffler, Chemist

- #T. McIntire, Rock River Division Superintendent
- *D. Robinson, Onsite Nuclear Safety

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

#Denotes those present during the management meeting on June 24, 1986.

*Denotes those present during the exit interview on June 30, 1986.

Action on Previous Inspection Findings (92701)

(Open) Open Item (454/86010-01(DRP)): Revision pending to LER 454/86004 on the problems with AR-3 relays in ESF breakers. In Revision 1 to LER 454/86004 the licensee identified an additional 26 breakers that have AR-3 relays. These breakers are the 480 V and 4.16 KV breakers that power both trains of emergency core cooling, containment spray, essential service water, component cooling, and the A auxiliary feedwater pumps and breakers that control the normal offsite and emergency onsite (diesel generator) AC power. With excessive arcing in the contacts of the AR-3 relay, the contacts can degrade to the point where they could weld themselves together. If this were to happen the breaker would not close to perform its ESF function. The licensee is inspecting all of these relays and will complete this task by July 1, 1986. The licensee is tracking this inspection by Action Item Record (AIR) 6-86-137. Pending completion of this inspection and review of the results by the inspector this item will remain open. LER 454/86004-01 is closed as discussed in Paragraph 5.a.

3. IE Bulletin (IEB) Followup (92703)

(Closed) IEB (454/86001-BB): "Minimum Flow Problems That Could Disable RHR Pumps." Although this IEB is only addressed to General Electric (GE), Boiling Water Reactors (BWRS), it does include reference to IE Information Notice 85094 which was addressed to all Operating License (OL) and Construction Permit (CP) Reactors; therefore, the licensee was requested to review the Byron systems for applicability. The licensee's response indicates that the two RHR minimum flow bypass valves, (one on each pump) are controlled by independent flow transmitters, powered from independent, safety-related electrical buses, and are motor operated (vice air driven). In addition, a review of the system shows that no single active failure will render both RHR trains inoperable, the Final Safety Analysis Review (FSAR) does not take credit for recirculation flow, and the single mode failure criteria is satisfied with one pump remaining operable. Based on this review, the postulated single failure problems described in this IEB are not applicable to Byron and this IEB is considered closed.

4. Safety Evaluation Report (SER) Review (92719)

Licensees are required to provide a Safety Parameter Display System (SPDS). The objective is to improve the ability of nuclear power plant control room operators to prevent accidents or cope with accidents if they occur by improving the information provided to them (NUREG-0660, Item I.D.1, "NRC Action Plan Developed as a Result of the TMI-2 Accident," USNRC, Washington, D.C., May 1980; Revision 1, August 1980). The need for an SPDS was confirmed in NUREG-0737 ("Requirements for Emergency Response Capability," USNRC, Washington, D.C., November 1980), and in Supplement 1 to NUREG-0737. The SPDS requirements in Supplement 1 to NUREG-0737 replaced those in earlier documents. Supplement 1 to NUREG-0737 requires each licensee or applicant to implement an SPDS on a schedule negotiated with the NRC. Human factors guidelines for SPDS design are currently provided in NUREG-0800 "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants" Section 18.2, Appendix A, "Human Factors Review Guidelines for the Safety Parameter Display System," November 1984, and NUREG-0700 "Guidelines for Control Room Design Reviews," September 1981.

I.D.2. Safety Parameter Display System (SPDS)

The results of NRR's audit of the Byron SPDS were contained in an October 30, 1985 letter from B. J. Youngblood (NRC) to Dennis L. Farrar (Commonwealth Edison). Three human engineering discrepancies were noted in the letter.

On June 25, 1986, the inspector reviewed the SPDS to verify that these three discrepancies had been corrected.

The first discrepancy noted that there was no clear way of determining whether the wide-range or narrow-range display was on the screen. The licensee attempted to correct this discrepancy by solid coloring the center of the wide-range display. The inspector, after discussions with NRR's human factors reviewer, did not find this acceptable. The licensee agreed to have its human factors consultant review the issue. Pending completion and review of the consultant's response to this issue, this matter is considered an Open Item (454/86021-01(DRP)).

The second discrepancy stated that the red alarm bars at the end of each Iconic spoke were difficult to detect. The inspector verified that these bars had been made longer and were now easy to detect.

The third discrepancy noted that the wide range steam generator level spoke did not cover the full range at plant operation. The licensee corrected this by changing the wide range steam generator reference level when the plant is at power. The inspector found this acceptable.

No violations or deviations were identified.

Licensee Event Report (LER) Followup (90712 and 92700)

a. (Closed) LERs (454/85099-LL; 454/86004-LL; 454/86014-LL; 454/86018-LL): An in-office review was conducted for the following LERs to determine that the reportability requirements were fulfilled, immediate corrective action was accomplished and corrective action to prevent recurrence had been accomplished in accordance with technical specifications.

LER No.

Title

454/85099-01	Actuation of the main control room ventilation system due to the spiking of the iodine channel of the OPR31J radiation.
454/86004-01	Auto Start of Auxiliary Building Charcoal Booster Fan Due to Failed Relay.
454/86014	Control Room Ventilation Actuation Due to High Vacuum Alarm on OPR32J Radiation Monitor.
454/86018	Main Control Room Ventilation Engineered Safety Features Actuation Due to Misalignment of Radiation Monitor Check Source.

No violations or deviations were identified.

b. (Closed) LERs (454/86015-LL; 454/86016-LL; 454/86017-LL): Through direct observation, discussions with licensee personnel, and review of records, the following LERs were reviewed to determine that the reportability requirements were fulfilled, immediate corrective action was accomplished, and corrective action to prevent recurrence had been accomplished in accordance with technical specifications.

LER No.

Title

- 454/86015 Incorrect Boron Dilution Protection System Flux Doubling Setpoint Calibration and Testing Due to Inadequate Procedure
- 454/86016 Failure to Maintain Fire watch at River Screen House Following Modifications to the CO₂ system.

454/86017 Unusual Event Declared with Both Trains of Control Room Ventilation Inoperable

LER 454/86015 described an event from October 31, 1984 through May 7, 1986 while in Cold Shutdown, Hot Shutdown, Hot Standby, and Startup at Power Levels less than permissive P-6 (1E-10 Amps), in which the setpoint of the Boron Dilution Protection System (BDPS) was not verified to be within its setpoint.

Technical Specification 4.3.1.1 requires that an Analog Channel Operational Test be performed on Source Range Nuclear Instrumentation Channels N31 and N32 at least once per 92 days, while in Modes 3, 4, or 5. Included in this surveillance test is a verification that BDPS will actuate with at least an increase of twice the count rate within a 10 minute period. On May 7, 1986, during a required review of surveillance procedures, 1BOS 3.1.1-15, "Analog Channel Operational Test of Source Range Nuclear Instrumentation Channels N31 and N32," licensee personnel identified that the test voltage used to verify the BDPS settling was too high, a 2.16 times increase in count rate test voltage was used, instead of a 2.0 times increase in count rate test voltage.

The licensee's investigation determined that the cause of this event was an inadequate surveillance procedure, which was exacerbated by the incomplete, confusing, and inconsistent technical information supplied by the BDPS vendor. The BDPS setpoint was correctly set to 2.0 during this time period; however, due to errors in the surveillance procedure, setpoint drift could not be detected below 2.16. The NSSS supplier, Westinghouse, has determined that a 2.5 times factor is within the bounds of the safety analysis. The BDPS has never been required to actuate on an actual flux doubling during this period.

The licensee's corrective actions included writing a special Procedure SPP 86-71 to verify the BDPS setpoint the next time the unit is in a mode where N31 and N32 are required to be operable.

Additionally, the quarterly and 18-month surveillance procedures for testing N31 and N32 will be revised to utilize the correct methodology. Completion of these revisions will be tracked by the licensee's Action Item Record (AIR) 6-86-132.

The failure to verify that the BDPS setpoint was less than a 2.0 times increase in count rate, at least once per 92 days, is a violation of Technical Specification 4.3.1.1 and is considered a violation identified by the licensee; in accordance with 10 CFR 2, Appendix C, Section V.A, no Notice of Violation will be issued, and this matter is considered closed (454/86021-02(DRP)).

LER 454/86016 described an event on May 27, 1986 when a fire watch was secured following a modification to the Carbon Dioxide (CO) system to the River Screen House (RSH).

At 0030 on May 27, 1986, the CO system at the RSH was taken out of service to perform a modification installing a backup electrical power supply. Technical Specification (TS) 3.7.10.3.d requires that an hourly fire watch patrol be established with the RSH CO system out-of-service. The Limiting Condition for Operation (LCO) for TS 3.7.10.3.d was entered at 0030 when the system was taken out-ofservice and a continuous fire watch was established. At 1800 Operational Analysis Department (OAD) individuals stopped work on the CO system, leaving it in a functional condition. However, the CO system was not operable in accordance with TS because retesting had not been performed, therefore the LCO was still in effect. The OAD engineer erroneously secured the fire watch and notified the shift engineer's designee that work had been completed. During a routine review of work logs the shift engineer noted that the OAD engineer had completed work. A verification that the fire watch was still posted, was requested, and at 2100 it was reported to the shift engineer that there was no fire watch in the area. The shift engineer immediately reestablished the fire watch and documented this event via a Deviation Report Subsequently, the CO system was tested satisfactorily and the LCO was exited. The fire watch was not present for approximately three hours; however, the post modification testing revealed that the CO system would have performed its intended function had it been called upon to do so.

The failure to maintain an hourly fire watch patrol in the RSH with the CO system not proven operable is a violation of TS 3.7.10.3.d and is considered a violation identified by the licensee; in accordance with 10 CFR 2, Appendix C, Section V.A, no Notice of Violation will be issued, and this matter is considered closed (454/86021-03(DRP)).

As corrective action the licensee has revised LCO procedures to require that the Fire Watch Supervisor acknowledge the start of fire watch requirements and also requires the Fire Watch Supervisor to maintain the fire watches until a licensed Senior Reactor Operator has determined that they are no longer required for the present plant conditions. LER 454/86017 is discussed in Paragraph 11.b.

6. Summary of Operations

The unit operated at power levels up to 90% for the entire month.

7. Monthly Surveillance Observation (61726)

The inspector observed technical specifications required surveillance testing on the 1B Essential Service Water (SX) pump, SX valve stroking, and Main Feedwater Containment Isolation valve stroking and verified that testing was performed in accordance with adequate procedures, that test instrumentation was calibrated, that limiting conditions for operation were met, that removal and restoration of the affected components were accomplished, that test results conformed with technical specifications and procedure requirements and were reviewed by personnel other than the individual directing the test, and that any deficiencies identified during the testing were properly reviewed and resolved by appropriate management personnel.

During performance of SX valve stroking the inspector identified a concern to the licensee's staff that the emergency lighting installed to illuminate the local control panel (1AF01J) for the 1B Auxiliary Feedwater (AF) pump was inadequate due to the installation of permanent scaffolding in front of Panel 1AF01J. This scaffolding was installed to allow for easier access to SX valves in the AF pump room. Pending relocation of this lighting, this concern will be followed as an Open Item (454/86021-04(DRP)).

No violations or deviations were identified.

8. Monthly Maintenance Observation (62703)

Station maintenance activities of 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 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 status of outstanding jobs and to assure that priority is assigned to safety-related equipment maintenance which may affect system performance.

The following maintenance activity was observed/reviewed:

Repair of Vital Instrument Inverter 11P05E

Following completion of maintenance on Inverter 1IP05E, the inspectors verified that this system had been returned to service properly.

No violations or deviations were identified.

9. Operational Safety Verification and Engineered Safety Features System Walkdown (71707 and 71710)

The inspectors observed control room operation, reviewed applicable logs and conducted discussions with control room operators during the month of June 1986. During these discussions and observations, the inspectors ascertained that the operators were alert, cognizant of plant conditions, attentive to changes in those conditions, and took prompt action when appropriate. The inspectors verified the operability of selected emergency systems, reviewed tagout records and verified proper return to service of affected components. Tours of the auxiliary, turbine and rad-waste buildings were conducted to observe plant equipment conditions, including potential fire hazards, fluid leaks and excessive vibration, and to verify that maintenance requests had been initiated for equipment in need of maintenance.

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. During the month of June 1986, the inspectors walked down the accessible portions of the Containment and Station Ventilation Stack Process Radiation Monitors system to verify operability. The inspectors also witnessed portions of the radioactive waste system controls associated with rad-waste shipments and barreling.

Facility operations were verified to be in accordance with the requirements established under technical specifications, 10 CFR, and administrative procedures.

No violations or deviations were identified.

10. Followup on Headquarters and Region III Requests (92701)

a. Temporary Instruction (TI) 2515/75, issued March 27, 1986, provides guidance for inspections of Limitorque Motor Valve Operator Internal Wiring in followup to inspections requested by IE Notice (IEN) 86003 and Generic Letter (GL) 85015. In response to these items the licensee has verified that Rockbestos Wiring was environmentally qualified for installation in Limitorque Motor Valve Operators. During the November 1985 outage the licensee inspected all environmentally qualified Motor Valve Operators and verified that all internal wiring was qualified Rockbestos wiring and any wiring that could not be verified as Rockbestos was replaced with Rockbestos wiring. Based on the actions taken by the licensee the inspector has no further questions regarding this matter and TI 2515/75, IEN 86003, and GL 85015 are all considered closed. b. TI 2515/77, issued April 1, 1986, requested information from the licens e on selected safety issues. Only Section 03.02.b is applicable to Byron Station and relates to bio-fouling of safety-related open-cycle cooling water heat exchanges. The only safety-related cooling system susceptible to this problem is the Essentia Service Water System (SX). The SX system obtains its water supply from the Rock River.

Byron Administrative Procedures BAP 599-40, "Byron Circulating Water Chemistry Monitoring Program Description," and BAP 599-41, "Byron Station Microbiological Program Description" define the licensee's program for control of bio-fouling of safety and non safety-related systems. Instrumentation is installed on most heat exchangers to monitor their performance and temporary instruments can be installed periodically on the remaining heat exchangers for performance monitoring. Instrument readings are recorded on log sheets each shift by non-licensed operators. Acceptable performance ranges are indicated on these log sheets. Performance outside the acceptable operating range is highlighted on the log sheets and all log sheets are reviewed by supervisory personnel, who initiate corrective actions as required. Additionally, these log sheets are reviewed by the engineering staff's system specialist for evaluation of long term performance and trending. Procedures exist in response to performance degradation of equipment and these are supplemented by engineering staff input for unique or difficult problems. Periodic inspections and/or flushes are conducted on these systems per approved procedures. The licensee has also retained the services of the NALCO Corporation to provide independent technical support and laboratory analysis of water conditions for heat exchanger performance and corrosion and chemistry control. This information was forwarded to Region III and TI 2515/77 is considered closed.

c. A May 16, 1986 memorandum from C. E. Norelius requested information from the licensee on any plans for a Low-Level Radioactive Waste Storage Facility to be built at the licensee's facility. In response to this request the licensee stated that at present there were no plans to build such a facility at Byron. The licensee is evaluating the feasibility and cost of such a facility; however, no determination has been made as to the structure's design, size, capacity or method of construction nor has a safety assessment been completed, including any contribution to the offsite dose rate from such facility.

No violations or deviations were identified.

11. Onsite Followup of Events at Operating Reactors (93702)

a. General

The inspector performed onsite followup activities for one event which occurred during June 1986. This followup included reviews of operating logs, procedures, Deviation Reports, Licensee Event Reports (where available), and interviews with licensee personnel. For the event, the inspector developed a chronology, reviewed the functioning of safety systems required by plant conditions, reviewed licensee actions to verify consistency with procedures, license conditions, and the nature of the event. Additionally the inspector verified that licensee investigation had identified root causes of equipment malfunctions and/or personnel error and had taken appropriate corrective actions prior to plant restart. Details of the event and licensee corrective actions developed through inspector followup are provided in Paragraph b.

b. Unusual Event on June 2, 1986 (LER 454/86017)

At 0001 on June 2, 1986, while in Mode 1 with reactor power at 75%, both trains of Control Room Ventilation (VC) were determined to be inoperable. At 0059 an Unusual Event was declared, and the licensee began reducing the turbine load to place the unit in Hot Standby (Mode 3).

On May 28, 1986 the OB Train of VC was taken out-of-service for planned maintenance. At 0001 on June 2, 1986, licensee personnel attempted to start the OA Train Makeup Fan to support replacement of a VC Radiation Monitor Filter. During the start attempt the fan tripped on high filter differential pressure (DP). Additionally, the discharge damper for the OA makeup fan did not modulate properly, but failed full open. With both trains of VC inoperable the licensee entered Technical Specification 3.0.3 and at 0059 declared an Unusual Event and began to ramp down the turbine, to place the unit in Mode 3.

The licensee recalibrated the DP switch, replaced the filter, and repaired the damper. Following satisfactory functional tests, the OA train of VC was declared operable and placed in service. The Unusual Event was terminated at 0424, and the unit was returned to rated power.

No violations or deviations were identified.

12. Licensee Actions Concerning Suspected Drug Use (99014)

<u>Concern</u>: On June 10, 1986, the Senior Resident Inspector (SRI) received an anonymous phone call from an individual who identified an employee at the Byron Station whom the caller had reason to believe may be using drugs. The person named in this concern was a non-management, non-licensed employee. The caller refused personal identification, would not supply additional information and did not desire a report on the outcome of the investigation to be conducted. The SRI notified the licensee of the phone call and details.

Findings: In keeping with the licensee's established drug awareness program, the employee was interviewed by Byron Supervisors and Managers and relieved of all duties at the Byron Station. The employee's photo identification security badge and access key-card were revoked and the individual's access was denied pending the outcome of an investigation. In keeping with the Commonwealth Edison established procedures, the employee provided an observed urine specimen to a local medical facility for analysis. The tests results of the urinalysis were negative. Additionally, a review of the employee's performance by station management revealed no abnormal behavior or indications of drug use during the employee's tenure prior to this accusation. Based on the negative test results, recommendations of Byron Management, and endorsement by the company medical staff, the individual was restored to security status and returned to full duty.

This concern is considered closed.

13. Management Meetings (30702)

On June 24, 1986, Messrs. R. F. Warnick, Chief, Reactor Projects Branch 1, W. L. Forney, Chief, Reactor Projects Section 1A, L. N. Olshan, Licensing Project Manager, and the NRC Resident Inspector staff met with licensee management and supervisory personnel denoted in Paragraph 1 of this report. This meeting was held to assess overall facility status, plant operations and to discuss agenda items which had developed since issuance of the operating license.

14. Violations Identified by the Licensee

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 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.A. 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, as 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. Violations of regulatory requirements identified by the licensee during the inspection for which no Notice of Violation will be issued are discussed in Paragraph 5.b.

15. 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 4 and 7.

16. Exit Interview (30703)

The inspectors met with licensee representatives denoted in Paragraph 1 at the conclusion of the inspection on June 30, 1986. 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/processes as proprietary.