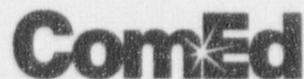


Commonwealth Edison Company  
Byron Generating Station  
4450 North German Church Road  
Byron, IL 61010-9794  
Tel 815-234-5441



July 14, 1997

LTR: BYRON 97-0168  
FILE: 1.10.0101

U.S. Nuclear Regulatory Commission  
Washington, DC 20555

Attention: Document Control Desk

Subject: Byron Nuclear Power Station Units 1 and 2  
Response to Notice of Violation  
Inspection Report No. 50-454/97004; 50-455/97004  
NRC Docket Numbers 50-454, 50-455

Reference: John A. Grobe letter to Mr. Graesser dated June 12, 1997, transmitting NRC  
Inspection Report 50-454/97004; 50-455/97004

Enclosed is Commonwealth Edison Company's response to the Notice of Violation (NOV) which was transmitted with the referenced letter and Inspection Report. The NOV cited one (1) Level IV violation requiring a written response. In addition, a response to the Inspection Follow-up Item (IFI) concerning the risk significant classification of four (4) ventilation systems is included as requested in the Inspection Report. ComEd's response to the NOV is provided in Attachment I and a response to the IFI is provided in Attachment II.

This letter contains the following commitments:

1. The risk significant Structures, Systems, and Components (SSCs) will be processed through the (a)(1) goal setting process in accordance with the Byron Site Maintenance Rule procedure.
2. ComEd Probabilistic Safety Analysis (PSA) Group will complete a review of Byron Station Maintenance Rule reliability criteria and recommend changes to the Maintenance Rule program to ensure that these criteria maintain the assumptions used in the PSA.
3. Based on the above actions by the ComEd PSA Group, the Byron Maintenance Rule Expert Panel will complete review and approval of any required changes to risk significant reliability performance criteria required to document the basis for the current (a)(1) or (a)(2) performance of the risk significant SSCs.
4. The Emergency Lighting System will be processed through the (a)(1) goal setting process in accordance with the Byron Site Maintenance Rule procedure.
5. Byron Maintenance Rule Expert Panel will complete review and approval of Emergency Lighting (LL) System performance criteria changes required to document the basis for the current (a)(1) or (a)(2) performance of this SSC.

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Byron Ltr: 97-0168

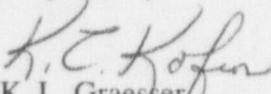
July 14, 1997

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6. The Emergency Lighting (LL) System Engineer will complete review of previous surveillance results and document previous functional failures of this SSC in the Maintenance Rule database via the Site Maintenance Rule Owner (SMRO).
7. The Fuel Handling System will be processed through the (a)(1) goal setting process in accordance with the Byron Site Maintenance Rule procedure.
8. Byron Maintenance Rule Expert Panel will complete review and approval of Fuel Handling (FH) System performance criteria changes required to document the basis for the current (a)(1) or (a)(2) performance of this SSC.
9. The Maintenance Rule Expert Panel will re-perform the risk significant review for the Main Control Room (VC), Diesel Generator (VD), Miscellaneous Electric Equipment (ESF Batteries) Room (VE), and ESF Switchgear (VX) Ventilation systems in order to more clearly document the bases of the risk significance classification.
10. The Maintenance Rule Expert Panel will implement any required Maintenance Rule programmatic changes based on the results of the risk significant review for the four ventilation systems.

If your staff has any questions or comments concerning this letter, please refer them to Don Brindle, Regulatory Assurance Supervisor, at (815) 234-5441 ext.2280.

Respectfully,

*for*   
K. L. Graesser  
Site Vice President  
Byron Nuclear Power Station

KLG/DB/rp

Attachment(s)

cc: A. B. Beach, NRC Regional Administrator - RIII  
G. F. Dick Jr., Byron Project Manager - NRR  
S. D. Burgess, Senior Resident Inspector, Byron  
R. D. Lanksbury, Reactor Projects Chief - RIII  
F. Niziolek, Division of Engineering - IDNS  
D. L. Farrar, Nuclear Regulatory Services Manager, Downers Grove  
Safety Review Dept, c/o Document Control Desk, 3rd Floor, Downers Grove  
DCD-Licensing, Suite 400, Downers Grove.

## ATTACHMENT I

### VIOLATION (454/455-97004-03)

During an NRC inspection conducted April 7-15, 1997, a violation of NRC requirements was identified. The violation is listed below:

10 CFR 50.65(a)(1) requires, in part, the holders of an operating license shall monitor the performance or condition of structures, systems or components (SSCs), against licensee-established goals, in a manner sufficient to provide reasonable assurance that such SSCs, within the scope of the rule, are capable of fulfilling their intended functions. When the performance or condition of an SSC does not meet established goals, appropriate corrective action shall be taken.

10 CFR 50.65(a)(2) requires, in part, that monitoring as specified in 10 CFR 50.65 paragraph (a)(1) is not required where it has been demonstrated that the performance or condition of an SSC is being effectively controlled through the performance of appropriate preventive maintenance, such that the SSC remains capable of performing its intended function.

Contrary to 10 CFR 50.65(a)(2), as of April 15, 1997, the time that the licensee elected to not monitor the performance or condition of certain SSCs against licensee-established goals pursuant to the requirements of Section (a)(1), the licensee had not demonstrated that the performance or condition of SSCs within the scope of 10 CFR 50.65 were being effectively controlled through the performance of appropriate preventive maintenance, as evidenced by the following examples:

- A. The licensee had not demonstrated that the performance of the auxiliary feedwater function (AF1), and the essential safety features and reactor protection actuation function (EF1) was being effectively controlled through the performance of appropriate preventive maintenance under the requirements of 10 CFR 50.65(a)(2). Specifically, the licensee failed to establish an adequate measure to evaluate the effectiveness of the performance of appropriate preventive maintenance on the auxiliary feedwater function, and the essential safety features and reactor protection actuation function prior to placing these SSCs under Section (a)(2). The licensee's basis for demonstrating effective preventive maintenance for these functions was the criterion that they experience less than two failures within 2 years. The appropriateness of the preventive maintenance evaluation was not adequate because the preventive maintenance criteria exceeded the values assumed in the licensee's probabilistic risk assessment without technical justification. As a result the systems would not have been controlled such that they remained capable of performing their intended functions. Therefore, the licensee's basis for placing the auxiliary feedwater function, and the essential safety features and reactor protection actuation function under the requirements of Section (a)(2) was inadequate and these functions should have been monitored in accordance with Section (a)(1).
- B. The licensee had not demonstrated that the performance of the emergency lighting system (LL1) was being effectively controlled through the performance of appropriate preventive maintenance under the requirements of 10 CFR 50.65(a)(2). Specifically, the licensee failed to establish adequate measures to evaluate the effectiveness of the preventive

maintenance on the emergency lighting system prior to placing this SSC under the requirements of Section (a)(2). The licensee's sole basis for demonstrating effective preventive maintenance for the emergency lighting system was the criterion that each emergency lighting unit experience less than three failures within a 2-year period. This criterion would allow an excessive failure rate for each emergency lighting unit without being evaluated for (a)(1). The number of demands for this standby system were assumed to be eight demands during a 2-year period, which would allow a 37 percent failure rate for each emergency lighting unit. In addition, previous emergency lighting surveillance results had not been reviewed to identify and evaluate past functional failures for emergency lighting units. Multiple failures of emergency lighting units would not demonstrate effective preventive maintenance because the performance of the emergency lighting system would not have been controlled such that it remained capable of performing its intended functions. Therefore, the licensee's basis for placing the emergency lighting system under the requirements of Section (a)(2) was inadequate and the emergency lighting system should have been monitored in accordance with Section (a)(1).

- C. The licensee had not demonstrated that the performance of the fuel handling equipment (FH1) was being effectively controlled through the performance of appropriate preventive maintenance under the requirements of 10 CFR 50.65(a)(2). Specifically, the licensee failed to establish adequate measures to evaluate the effectiveness of the preventive maintenance on the fuel handling equipment prior to placing this SSC under the requirements of Section (a)(2). The licensee's sole basis for demonstrating effective preventive maintenance for the fuel handling system was the criterion that the fuel handling system experience less than four equipment failures within a 2-year period. This criterion would allow functional failure events to occur that could result in up to four events resulting in damage to fuel assemblies during handling, events that could impair safe fuel movement or impair the ability of the spent fuel pool racks to maintain Keff less than 0.95 in the pool without compensatory actions. Multiple safety significant failures of these types would not demonstrate effective preventive maintenance because the performance of the fuel handling system would not have been controlled such that it remained capable of performing its intended functions. Therefore, the licensee's basis for placing the fuel handling system under the requirements of Section (a)(2) was inadequate and the fuel handling system should have been monitored in accordance with Section (a)(1).

This is a Severity Level IV violation.

## **REASON FOR THE VIOLATION**

- Part A: The violation takes issue with both the numerical values used in the Station's Maintenance Rule performance criteria and the methodology used as well. While the PSA submitted by ComEd for Byron Station assumes certain levels of reliability, in the form of specific assumed failure rates for components, the Station's performance criteria monitors functional failures of entire functions over time. The key differences in these two parameters lies in demand monitoring for equipment. In order to show the number of functional failures established by Byron Station in their performance criteria maintains the assumed failure rates in the PSA, a technical basis must be established for any failure rate assumed in any analysis. This technical basis must ultimately address how the number of demands used in determining an assumed failure rate was derived. The Maintenance Rule programs at ComEd Stations do not include mechanisms to count and monitor this type of performance data.
- Part B: The Emergency Lighting (LL) System is a non-risk significant SSC scoped within the Maintenance Rule at Byron Station due to the use of this SSC during the performance of Emergency Operating Procedures (EOPs), coincident with a Station blackout event. Because of its relatively low risk significance, minimal impact on the completion of the EOPs should a single lighting unit fail, and the large number of lighting units, a performance criteria of "less than or equal to two functional failures per battery per two years" was originally established for this SSC. Based on the number of demands this SSC experiences over the monitoring period, the basis for this performance criteria, along with the previous historical performance from surveillance results, needs to be better documented.
- Part C: The Fuel Handling (FH) System is a non-risk significant SSC scoped within the Maintenance Rule at Byron Station due to the potential impact this system may have on the safe handling and storage of nuclear fuel. The safe handling, safe storage, and miscellaneous equipment functions of this system are currently monitored under one performance criteria. During the inspection this caused some concern as to how the more serious events (such as fuel damage during movement or spent fuel pool reactivity events) would be evaluated because up to three functional failures are allowed under the current performance criteria. The reliability performance criteria basis needs to be revised to more clearly define how the more serious fuel handling and storage events will be evaluated.

## **CORRECTIVE STEPS TAKEN AND RESULTS ACHIEVED**

Part A:

1. All risk significant SSCs modeled in Byron's PSA have been placed in the (a)(1) classification until an adequate link between the PSA assumptions and Byron's Maintenance Rule reliability performance criteria is established.

Part B:

1. The Emergency Lighting System has been placed in (a)(1) classification until a review of the current performance criteria is completed.

Part C:

1. The Fuel Handling System has been placed in (a)(1) classification until a review of the current performance criteria is completed.

**CORRECTIVE STEPS THAT WILL BE TAKEN TO AVOID FURTHER VIOLATION**

Part A:

1. The risk significant SSCs will be processed through the (a)(1) goal setting process in accordance with the Byron Site Maintenance Rule procedure. This action will be tracked by NTS Item # 454-201-97-CAQS01821.
2. ComEd PSA Group will complete a review of Byron Station Maintenance Rule reliability criteria and recommend changes to the Maintenance Rule program to ensure that these criteria maintain the assumptions used in the PSA. This action will be tracked by NTS Item # 454-100-97-00403-01.
3. Based on the above actions by the ComEd PSA Group, the Byron Maintenance Rule Expert Panel will complete review and approval of any required changes to risk significant reliability performance criteria required to document the basis for the current (a)(1) or (a) (2) performance of the risk significant SSCs. This item will be tracked by NTS Item # 454-100-97-00403-02.

Part B:

1. The Emergency Lighting System will be processed through the (a)(1) goal setting process in accordance with the Byron Site Maintenance Rule procedure. This action will be tracked by NTS Item # 454-201-97-SCAQ00030.
2. Byron Maintenance Rule Expert Panel will complete review and approval of Emergency Lighting (LL) System performance criteria changes required to document the basis for the current (a)(1) or (a)(2) performance of this SSC. This action will be tracked by NTS Item # 454-100-97-00403-03.
3. The Emergency Lighting (LL) System Engineer will complete review of previous surveillance results and document previous functional failures of this SSC in the Maintenance Rule database via the Site Maintenance Rule Owner (SMRO). This item will be tracked by NTS Item # 454-100-97-00403-04.

Part C:

1. The Fuel handling System will be processed through the (a)(1) goal setting process in accordance with the Byron Site Maintenance Rule procedure. This action will be tracked by NTS Item # 454-201-97-SCAQ01811.
2. Byron Maintenance Rule Expert Panel will complete review and approval of Fuel Handling (FH) System performance criteria changes required to document the basis for the current (a)(1) or (a)(2) performance of this SSC. This action will be tracked by NTS Item # 454-100-97-00403-05.

**DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED**

Full compliance will be achieved on 02/15/98 when all of the above action steps will be completed.

## ATTACHMENT II

### INSPECTOR FOLLOWUP ITEM (454/455-97004-01)

The following Inspection Follow-up item was noted during the Inspection:

The licensee could not provide any documentation concerning the risk significance of the remaining 38 systems that were not formally evaluated by the Delphi process other than to state the expert panel considered those systems to be of low risk significance by consensus. The inspectors identified 4 of the 38 systems not formally evaluated by the Delphi process where the low risk significance ranking may not be appropriate. These were the ventilation systems for the diesel generator (DG), battery rooms, miscellaneous electrical equipment room (MEER), and control room. The equipment that the ventilation functions support was considered high risk significant. The loss of the ventilation systems would result in the loss of equipment in these areas.

During the inspection, the licensee's staff stated the SSCs were low risk significant because compensatory measures could be put in place. For example, if the DG room ventilation system was inoperable, the licensee would use portable fans in doorways to provide ventilation. However, the licensee had not considered how the portable fans would be powered if the DG was the only electrical power supply. The licensee did not justify having a support system less safety significant than the equipment that requires this support system to operate. The licensee did not demonstrate that procedures were available and that actions for compensatory measures could be taken during an actual event before the room temperature affected the high safety significant equipment. This issue is considered an Inspection Follow-up Item (IFI) (50-454/455/97004-01(DRS)) pending the licensee providing additional information to show that the four ventilation systems did not have to be classified as safety significant because other compensatory measures could be taken to prevent room temperatures from affecting the equipment in the rooms.

### REASON FOR THE ITEM

The original Expert Panel classified these four systems as non-risk significant based on the results of a Delphi survey and that these SSCs are not formally modeled in Byron Stations PSA. The results of the original Delphi review were provided to the Inspector during the audit. The current (reconstituted) Expert panel did not formally re-perform the risk significance of these systems. Based on the Inspection Report, the documentation provided to the NRC team during their visit was insufficient to support the conclusion that these ventilation systems are non-risk significant.

### CORRECTIVE STEPS TAKEN AND RESULTS ACHIEVED

None.

### **CORRECTIVE STEPS THAT WILL BE TAKEN TO RESOLVE THIS ITEM**

1. The Maintenance Rule Expert Panel will re-perform the risk significant review for the Main Control Room (VC), Diesel Generator (VD), Miscellaneous Electric Equipment (ESF Batteries) Room (VE), and ESF Switchgear (VX) Ventilation systems in order to more clearly document the bases of the risk significance classification. This action will be tracked by NTS Item # 454-100-97-00401-01.
2. The Maintenance Rule Expert Panel will implement any required Maintenance Rule programmatic changes based on the results of the risk significant review for the four ventilation systems. This action will be tracked by NTS Item # 454-100-97-0041-02.

### **DATE WHEN CORRECTIVE STEPS WILL BE ACHIEVED**

Full compliance will be achieved on 09/12/97 when any required Maintenance Rule programmatic changes based on the results of the risk significant review for the four ventilation systems is completed.