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ComEd

IEOI

July 29, 1998

LTR: BYRON 98-0223 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. 50-454/98011; 50-455/98011 NRC Docket Numbers 50-454, 50-455

REFERENCE: Geoffrey E. Grant letter to Mr. Kingsley dated June 29, 1998, transmitting NRC Inspection Report 50-454/98011; 50-455/98011

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 five (5) Severity Level IV violations requiring a written response. ComEd's response is provided in the attachment.

This letter contains the following commitments:

- The Operations Manager will sponsor a task team to review the control of OOS boundaries for outage modifications.
- 2) The Operations Manager, Maintenance Manager, Site Construction Superintendent, the Work Control Superintendent and the Site Engineering Manager will, based on the results of the task team formed, clarify expectations and reinforce requirements of OOS boundaries and OOS walkdowns for outage modifications.
- Operating will revise procedure BOP RH-9 (Pump Down of the Refueling Cavity to the RWST).
- Operating/Fuel Handling supervision will review the investigation report involving the draining of the Spent Fuel Pool with all Operating and Fuel Handling supervisors.



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- 5) Operating Department will establish a mechanism to track the position/status of 1/2FH001 and the SFP sluice gate in the Main Control Room.
- 6) Operating supervision will reinforce the consistent and proper use of human performance improvement tools with all Operating Personnel.
- 7) The Electronic Work Control System (EWCS) database is being updated to identify doors and floor plugs as being ventilation barriers, where applicable.
- 8) Compensatory measures for various ventilation impairment scenarios have been developed by site personnel. These compensatory measures are currently being written into site impairment response procedures to ensure that they are standardized and widely distributed for use by site personnel.
- 9) Three tools are being developed to help site personnel identify ventilation barriers. Door labels have been developed and are currently being placed that clearly identify doors as a fire, ventilation, flood, HELB, or Security barrier. A door matrix for the same five criteria has been developed and distributed pending formal procedure review and approval. Finally, plant floor plan prints are being developed that depict in a color-coded scheme the location of fire, ventilation, flood, and HELB barriers.
- 10) The site procedure (BAP 1100-3) and associated matrices and field use data sheets are being reviewed and rewritten to both ensure technical correctness and to improve human factoring in the application of the impairment process.
- 11) A temporary hatch is being engineered to be placed over the RWST pipe tunnel hatch cover that will contain several threaded penetrations within the temporary hatch.

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- Revise BMP 3300-25 to provide human factor improvements. 12)
- 13) The long-term resolution of the 48" VQ Normal Containment Purge Isolation Valves is currently under consideration. This will include initiating a DRP to change the UFSAR to more correctly describe the operation of the VQ Normal Containment Purge System.

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: C. J. Paperiello, Acting NRC Regional Administrator RIII
 - J. B. Hickman, Byron Project Manager NRR
 - E. W. Cobey, Senior Resident Inspector, Byron
 - M. J. Jordan, Reactor Projects Chief RIII
 - F. Niziolek, Division of Engineering IDNS

ATTACHMENT I

VIOLATION (454/455-98011-01)

Technical Specification 6.8.1.a states that written procedures shall be established, implemented and maintained for procedures recommended in Appendix A of Regulatory Guide 1.33, Revision 2, February 1978.

Appendix A of Regulatory Guide 1.33, Revision 2, February 1978, Step 1.c, specifies equipment control (e.g., locking and tagging) as an example of an administrative procedure.

Byron Administrative Procedure 330-1, "Station Equipment Out-of-Service Procedure," Revision 26, was issued to control equipment for maintenance. Paragraph C.4.c.2, states, in part, that the out-of-service (OOS) must be sufficient to isolate equipment being worked on.

Contrary to the above, on May 2, 1998, OOS 970012670 was not sufficient to isolate the equipment being worked on. Consequently, when a hole was drilled in the 2B chemical and volume pump succion line, a safety-related component, to install a vent, contaminated water sprayed out of the suction line due to an inadequate OOS boundary.

This is a Severity Level IV violation (Supplement IV). (50-454/455-98011-01(DRP))

REASON FOR THE VIOLATION

We agree with the violation. Primarily, Construction Department personnel did not adequately walk down the work prior to beginning the modification installation work. The walk down was not performed adequately in that committed actions were not carried out due to shortcuts evoked. The root cause as to why this work practice was inadequate lies in managerial methods, in that the effectiveness of the methods used in walk down performance versus expectations and procedural requirements were not monitored and assessed.

CORRECTIVE STEPS TAKEN AND RESULTS ACHIEVED

- The leak was stopped, a catch basin was set up, and the leak area was decontaminated.
- The appropriate LCOARs, 2BOS 1.2.1-1a and 2BOS 4.10-1a, were entered for piping structural integrity and loss of emergency boration flowpath.
- 3. Core alterations were suspended.
- A prompt investigation and engineering safety evaluations were initiated.

- 5. Contingency plans were developed.
- 6. Proper OOS boundaries were determined and appropriate cards hung and equipment removed from service.
- 7. A freeze plug was applied upstream of the drilled hole and the modification work completed.

CORRECTIVE STEPS THAT WILL BE TAKEN TO AVOID FURTHER VIOLATION

- The Operations Manager will sponsor a task team to review the control of OOS boundaries for outage modifications. This action will be tracked by NTS item# 455-200-98-CAQS00004-01.
- 2. The Operations Manager, Maintenance Manager, Site Construction Superintendent, the Work Control Superintendent and the Site Engineering Manager will, based on the results of the task team formed, clarify expectations and reinforce requirements of OOS boundaries and OOS walkdowns for outage modifications. This action will be tracked by NTS item# 455-200-98-CAQS00004-02.

DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED

Full compliance was achieved on May 2, 1998 when proper OOS boundaries were determined, appropriate cards hung and equipment removed from service.

ATTACHMENT II

VIOLATION (454/455-98011-03)

10 CFR Part 50, Appendix B, Criteria V, "Instructions, Procedures, and Drawings," requires that activities affecting quality be prescribed by documented instructions, procedures, or drawings of a type appropriate to the circumstances and be accomplished in accordance with these instructions, procedures, or drawings.

Byron Operating Procedure RH-9, "Pump Dorn of the Refueling Cavity to the RWST (Refueling Water Storage Tank)," Revision 11, Paragraph C.12, specifies that the sluice gate between the spent fuel pocl and the fuel transfer canal be closed prior to lowering water level.

Contrary to the above, on May 4, 1998, Byron Operating Procedure RH-9, Revision 11, Paragraph C.12, was not followed in lowering the water level in the Unit 2 refueling cavity in that the sluice gate was open. Consequently, approximately 8 inches of water level was inadvertently drained from the spent fuel pool.

This is a Severity Level IV violation (Supplement IV). (50-454/455-98011-03(DRP))

REASON FOR THE VIOLATION

We agree with the violation. Inadequate written and verbal communication between work groups was the root cause for this event. The failure of station personnel to Qualify, Validate and Verify (QV&V) information during conversations and when making decisions was also a significant contributor. The proper use of QV&V by station personnel would have prevented this event from occurring.

Fuel Handling was unaware that the evolution of pumping down the Reactor (RX) Cavity and the Fuel Transfer Canal were to occur while they were in progress of transferring the RVLIS probe to the FHB. The decision made by the Outage Control Center (OCC) to proceed with preparations for ECCS full flow testing was based on inadequate information / knowledge of the Fuel Handlers activities.

The Unit Supervisor failed to QV&V the source of the information when he attempted to verify the sluice gate's position prior to initiating the RX cavity and Fuel Transfer Canal pump down. The Unit Supervisor and the OCC Manager failed to identify / question the SFP sluice gate's position during their conversation about the upcoming evolution of preparing for the ECCS full flow testing.

CORRECTIVE STEPS TAKEN AND RESULTS ACHIEVED

- Pump down of the Reactor Cavity, Transfer Canal and SFP was immediately stopped upon receiving the SFP low level alarm.
- The SFP low level alarm was immediately verified and RX Cavity, Fuel Transfer Canal and SFP levels were restored.
- RX Cavity to Fuel Transfer Canal isolation valve 2FH001 was closed after refilling the RX Cavity, Transfer Canal and SFP and before proceeding with further preparations for ECCS full flow testing.
- Individual involved was counselved regarding the use of clear, concise communications with clarifying questions to ensure understanding.

CORRECTIVE STEPS THAT WILL BE TAKEN TO AVOID FURTHER VIOLATION

- 1. Operating will revise procedure BOP RH-9 (Pump Down of the Refueling Cavity to the RWST). The procedure revision will ensure provisions are incorporated that require positive verification, that 1/2FH001 and the SFP sluice gate are properly positioned by either Operation or Fuel Handling personnel. Additionally, the procedure revision will ensure that the sluice gate seal is properly pressurized and does not leak during any drain down of the Fuel Transfer Canal. This action will be tracked by NTS item# 455-200-98-CAQS00003-01.
- 2. Operating/Fuel Handling supervision will review this investigation report with all Operating and Fuel Handling supervisors. Operating/Fuel Handling supervision will emphasize the expectation of utilizing the human error reduction techniques of Qualifying Validating and Verifying information used in the decision making processes. This action will be tracked by NTS item# 455-200-98-CAQS00003-02.
- 3. Operating Department will establish a mechanism to track the position/status of 1/2FH001 and the SFP sluice gate in the Main Control Room. The mechanism should require Fuel Handling/Operating to interface each time 1/2FH001 or the SFP sluice gate are re-positioned or operated. This action will be tracked by NTS item# 455-200-98-CAQS00003-04.
- 4. Operating supervision will reinforce the consistent and proper use of the human performance improvement tools with all Operating Personnel.These actions will be tracked by NTS item# 455-200-98-CAQS00003-05.

DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED

Full compliance was achieved on May 4, 1998 when the Reactor Cavity and Fuel Transfer canal pump down was secured, the alarm was verified as valid and Reactor Cavity, Fuel Transfer Canal and Spent Fuel Pool levels were restored.

ATTACHMENT I11

VIOLATION (454/455-98011-06)

10 CFR Part 50, Appendix B, Criteria V, "Instructions, Procedures, and Drawings," requires that activities affecting quality be prescribed by documented instructions, procedures, or drawings of a type appropriate to the circumstances and be accomplished in accordance with these instructions, procedures, or drawings.

Byron Administrative Procedure (BAP) 1100-3, "Fire Protection Systems, Fire Rated Assemblies, Ventilation Seals, Flood Seals, and Water Tight Doors Impairments," Revision 11, Paragraph C.1, specifies, in part, that a Barrier/Fire Protection Systems Impairment Permit, BAP 1100-3T1, is required for all ventilation seals which are impaired.

Contrary to the above, activities affecting quality were not accomplished in accordance with applicable procedures or instructions in the following instances:

- (1) On April 7-11, 1998, a 4-inch penetration sleeve, a safety-related ventilation seal above door ODSD269 going into the Unit 1 Spray Additive Tank Room and Pipe Penetration Area, was impaired by power cables without a Barrier/Fire Protection Systems Impairment Permit, BAP 1100-3T1.
- (2) On April 7-11, 1998, a 4-inch penetration sleeve, a safety-related ventilation seal above door ODSD278 going into the Unit 2 Spray Additive Tank Room and Pipe Penetration Area, was impaired by power cables without a Barrier/Fire Protection Systems Impairment Permit, BAP 1100-3T1.
- (3) On April 10-11, 1998, the 2B safety injection pump room door safetyrelated ventilation seal was impaired by cables and hoses without a Barrier/Fire Protection Systems Impairment Permit, BAP 1100-3T1.
- (4) On April 11-13, 1998, the 2B chemical and volume control pump room door safety-related ventilation seal was impaired by cables without a Barrier/Fire Protection Systems Impairment Permit, BAP 1100-3T1.

This is a Severity Level IV violation (Supplement IV). (50-454/455-98011-06(DRP))

REASON FOR THE VIOLATION

We agree with the violation. Byron acknowledges that a number of violations to the impairment procedure occurred as delineated in this Notice of Violation (NOV). The guidance provided in the impairment procedure was not clear regarding ventilation barrier impairment and in these cases, the provided guidance was not followed. Byron has self-identified that the existing impairment process procedure does not meet the same standards for identifying impairment barriers and prescribing impairment compensatory actions to be taken as other site Technical Specification or UFSAR processes and procedures. A number of corrective actions have been identified as described below and implementation plans are in progress. The events described in this NOV occurred during the recent refueling outages when a number of impairments to support outage work was large and the process was most challenged.

One significant aspect of the site's unsatisfactory performance impairing ventilation barriers is that identification mechanisms do not exist in the work planning process because barriers have not been well defined or listed in any documents accessible to site personnel. Another aspect is that compensatory measures were not delineated in any procedures and have historically been determined case by case based on the professional judgement of a few knowledgeable engineers. Ventilation barriers have not been labeled in the field as a second verification tool for those actually impairing the barrier. Finally, the procedure itself provided inadequate guidance for the field worker actually utilizing the process.

CORRECTIVE STEPS TAKEN AND RESULTS ACHIEVED

 At the time of discovery of each of the impaired ventilation barriers, appropriate compensatory measures were put in place.

CORRECTIVE STEPS THAT WILL BE TAKEN TO AVOID FURTHER VIOLATION

- 1. The Electronic Work Control System (EWCS) database is being updated to identify doors and floor plugs as being ventilation barriers, where applicable. This enhancement was successfully implemented for fire barriers and is being expanded to include ventilation, flood, and highenergy line break (HELB) barriers. This database barrier identifier helps ensure that impairments are identified before the related work begins so that appropriate compensatory measures become part of the work plan. This action will be tracked by NTS item# 455-100-28-01106-01.
- 2. Compensatory measures for various ventilation impairment scenarios have been developed by site personnel. These compensatory measures are currently being written into site impairment response procedures to ensure that they are standardized and widely distributed for use by site personnel. This action will be tracked by NTS item# 455-100-98-01106-02.
- 3. Three tools are being developed to help site personnel identify ventilation barriers. Door labels have been developed and are currently being placed that clearly identify doors as a fire, ventilation, flood, NELB, or Security barrier. A door matrix for the same five criteria has been developed and distributed pending formal procedure review and approval. Finally, plant floor plan prints are being developed that depict in a color-coded scheme the location of fire, ventilation, flood, and HELB barriers. This action will be tracked by NTS item# 455-100-98-01106-03.

4. The site procedure (BAP 1100-3) and associated matrices and field use data sheets are being reviewed and rewritten to both ensure technical correctness and to improve human factoring in the application of the impairment process. This action will be tracked by NTS item# 455-100-98-01106-04.

DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED

1. Full compliance was achieved on April 13, 1998 when ventilation barriers were appropriately controlled.

ATTACHMENT IV

VIOLATION (454/455-99011-07)

10 CFR Part 50, Appendix B, Criteria V, "Instructions, Procedures, and Drawings," requires that activities affecting quality be prescribed by documented instructions, procedures, or drawings of a type appropriate to the circumstances and be accomplished in accordance with these instructions, procedures, or drawings.

Byron Maintenance Procedure 3300-25, "Refueling Water Storage Tank (RWST) Pipe Tunnel Hatch Cover (BILCO)," Revision 0, Section F.4. specifies, in part, that only one penetration sleeve be open at a time to maintain the auxiliary building pressure negative.

Contrary to the above, on April 10-11, 1998, the RWST pipe tunnel hatch cover, which is a ventilation seal between the auxiliary building and the outside atmosphere, had two 6-inch and four 4-inch penetrations sleeves simultaneously open with cabling running through them.

This is a Severity Level IV violation (Supplement I). (50-455/98011-07(DRP))

REASON FOR THE VIOLATION

We agree with the violation. A permanent hatch is removed to provide access for electrical, water, and air supplies plus eddy current cables into the Auxiliary Building for steam generator inspections during refueling outages. The Refueling Water Storage Tank (RWST) tunnel is sealed off, the permanent Latch is removed, a temporary hatch is installed, and the RWST tunnel is reopened. This temporary hatch has various sized capped sleeves to provide access to the Auxiliary Building through the 2B Safety Injection (SI) pump room.

Procedure BMP 3300-25, "Refueling Water Storage Tank (RWST) Pipe Tunnel Hatch Cover (BILCO)," states, "Only one penetration sleeve should be open at a time to keep Auxiliary Building pressure at maintained negative." After necessary cabling/hoses are installed in one penetration, that penetration is to be sealed before the next penetration is opened.

The procedure is a new procedure and was used once before during the Unit 1 Refueling and Steam Generator Replacement outage. The field engineer assigned did not review the work package or provide the contractors with a pre-job brief concerning the requirements of the procedure contrary to guidance provided by internal Maintenance Memo 700-5. The field engineer was unaware of any procedure concerning the temporary hatch sleeve penetrations.

The root cause for this event is inadequate administrative controls for ventilation barrier impairments and failure to provide workers with adequate pre-job briefing. Contributing causes to this event were change management (working group personnel were not aware of the new procedure) and a lack of communication between field engineers.

CORRECTIVE STEPS TAKEN AND RESULTS ACHIEVED

- At the time of discovery of the impaired ventilation barrier, appropriate compensatory measures were put in place.
- The field engineers involved have been counseled with respect to their individual accountabilities and responsibilities.
- 3. Byron Station newsletter dated 4/29/98, identified the administrative requirement, "If you need to prop open any door, open any penetration or open any wall in the power block, you need to generate a Fire Penetration Impairment Permit (FPIP) using BAP 1100-3 before you do it."
- 4. The Station Manager issued a letter (98-0159) on 5/16/98 to ensure the expectations are properly communicated to Station personnel.

CORRECTIVE STEPS THAT WILL BE TAKEN TO AVOID FURTHER VIOLATION

- 1. A temporary hatch is being engineered to be placed over the RWST pipe tunnel hatch cover that will contain several threaded penetrations within the temporary hatch. These penetrations are individually pipe capped. During an outage, individual penetrations can be opened to run cables through as necessary and maintain the integrity of the ventilation barrier within design limits for potential air flow. This action will be tracked by NTS item# 455-100-98-01107-01.
- Revise BMP 3300-25 to provide human factor improvements. This action will be tracked by NTS item# 455-180-98-SCAQ00005-01.

DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED

 Full compliance was achieved on April 11, 1998 when the ventilation barrier was appropriately controlled.

ATTACHMENT V

VIOLATION (454/455-98011-11)

10 CFR 50.71(e) requires, in part, that the licensee shall update the Final Safety Analysis Report (FSAR) periodically, as provided in Paragraph (4) of the FSAR to assure that the information included in the FSAR contains the latest material developed. The FSAR shall be revised to include the effects of all safety evaluations performed by the licensee in support of conclusions that changes did not involve an unreviewed safety question.

10 CFR Part 50.71(e)(4) requires, in part, that revision must be filed ethnually or 6 months after each refueling outage provided that the interval between successive updates does not exceed 24 months. The revisions must reflect changes up to a maximum of 6 months prior to the date of filing.

Contrary to the above, as of May 30, 1998, the licensee had not updated the FSAR to include the effects of safety evaluation, T1-93-0152, which was conducted in October 1993. Specifically, the safety evaluation concluded that a change to allow the use of the mini-purge system in lieu of the containment purge system did not involve an unreviewed safety question and the FSAR was not revised to reflect the change.

This is a Severity Level IV violation (Supplement I). (50-454/455-98011-21(DRP))

REASON FOR THE VIOLATION

We agree with the violation. Safety Evaluation 71-93-0152 was written to propose a change to the UFSAR to allow the use of the mini-purge system in lieu of the containment purge system and that it did not involve an unreviewed safety question. On-Site Reviews (OSR) #93-098 and 93-099, written in October 1993, acknowledge that Unit 2 and 2 VQ Normal Containment Purge System have not operated for some time and attempted to disposition issues associated with this system.

The OSR's both state that a Draft Fevision Package (DRP) would be submitted to update Chapters 9.4.9 and 15.7.4 of the UFSAR to describe the current operation of the VQ Containment Purge System. Based on Station records, the DRP was not initiated. Subsequent review of design basis documents identified that the UFSAR had not been updated. We were unable to determine why this was overlooked and believe it to be an isolated case.

Subsequently, DRP 7-123 was generated on 8/25/97 to update the UFSAR. During the processing of an engineering evaluation for a replacement valve seat, the pending UFSAR change, DRP 7-123, was reviewed and determined to be inadequate. This DRP did not change UFSAP paragraph 15.7.4.2.2.3, involving operation of the purge system during a Fuel Handling Accident. The DRP was cancelled on 2/18/98 pending resolution of all issues involving Unit 1 and 2 VQ Normal Containment Purge System and initiation of a new DRP.

CORRECTIVE STEPS TAKEN AND RESULTS ACHIEVED

1. None

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CORRECTIVE STEPS THAT WILL BE TAKEN TO AVOID FURTHER VIOLATION

1. The long-term resolution of the 48" VQ Normal Containment Purge Isolation Valves is currently under consideration. This will include initiating a DRP to change the UFSAR to more correctly describe the operation of the VQ Normal Containment Purge System. This action will be tracked by NTS item# 454-201-98-CAQS00475-01.

DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED

 Full compliance will be achieved by December 31, 1998 when the UFSAR revision is submitted.