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Address Reply to: Post Office Box 767
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May 16, 1983

Mr. James G. Keppler, Regional Administrator
Directorate of Inspection and
Enforcement - Region III
U.S. Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, IL 60137

Subject: Byron Station Units 1 and 2
30 day Response to I.E.
Inspection Report Nos.
50-454/83-12 and 50-455/83-10

References (a): W. S. Little letter to Cordell Reed dated April 13, 1983.

(b): W. S. Little letter to Cordell Reed dated February 22, 1983 (I.E. Insp. Rept. No. 50-454/83-03).

(c): E. D. Swartz letter to H. R. Denton dated March 23, 1983.

Dear Mr. Keppler:

Reference (a) provided the results of an inspection conducted by Mr. M. A. Ring of your office on February 24, 25, 28, March 1-4, and 7-9, 1983 of activities at our Byron Station. During that inspection, certain activities appeared to be in noncompliance with NRC requirements. This letter along with the Attachments provide the Commonwealth Edison Company response to the Notice of Violation as appended to Reference (a).

The two Reference (a) items of noncompliance were previously documented as two unresolved items in the Reference (b) Inspection Report. A teleconference was held between Region III, NRR, and Commonwealth Edison on March 14, 1983 to address these unresolved items. The discussions centered around our design philosophy for meeting the regulatory requirements for RCS leak detection and the inadequacies of our FSAR as written. Ultimately, Reference (c) was provided to clarify our position concerning such system capabilities, and to provide an advance copy of the requisite changes to the Byron and Braidwood FSAR concerning this issue.

By copy of Reference (c) to Region III, we were hopeful that our clarifications and described methods for RCS leak detection would satisfy Region III's remaining concerns in this matter. In our judgement, the regulatory requirements for RCS leak detection are being met for our Byron and Braidwood Stations through the means described in Reference (c).

The Attachment to this letter reiterates our Reference (c) position. We believe that the actions taken by Commonwealth Edison as described in Reference (c) were sufficient to close out the two unresolved items without the need for escalation of this matter to items of noncompliance as appended to Reference (a).

To the best of my knowledge and belief, the statements contained herein and in the Attachment are true and correct. In some respects these statements are not based on my personal knowledge but upon information furnished by other Commonwealth Edison employees. Such information has been reviewed in accordance with Company practice and I believe it to be reliable.

Please address any questions that you or your staff may have concerning this matter to this office.

Very truly yours,

Dennis L. Farrar
Director of Nuclear Licensing

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Attachment

cc: Region III Inspector - Byron

6581N

ATTACHMENT

Response to Notice of Violation

Violation 1

10 CFR 50, Appendix B, Criterion III, design control states, "Measures shall be established to assure that applicable regulatory requirements and the design basis, as defined in 50.2 and as specified in the license application, for those structures, systems, and components to which this appendix applies are correctly translated into specifications, drawings, procedures, and instructions."

Paragraph 5.2.5.1.a of the Byron/Braidwood FSAR states, "The containment floor drain sump contains a weir box for detecting and monitoring unidentified leakage. Leakage is routed to the unidentified leakage weir box through the containment floor drain system. In the unidentified leakage weir box no normal leakage is expected and therefore its design allows detection and monitoring of 1 gpm of leakage. Weir box design will allow the detection system to response to 1 gpm increase in leakage within 1 hour."

Contrary to the above, the licensee designed the containment floor drain sump and associated weir such that leakage must pass through an oil separator box before reaching the containment floor drain sump weir box. The oil separator holds approximately 180 gallons below the bottom of the pipe which serves to transport water the the floor drain sump weir. In a situation where the separator is initially dry and normal leakage is 0, a 1 gpm leak would require 3 hours to fill the oil separator before water even started to fill the sump weir box. In this case, the designed and built system would not meet the stated requirements of the FSAR.

Violation 2

10 CFR 50, Appendix B, Criterion XI, Test Control states, in part, that "A test program shall be established to assure that all testing required to demonstrate that structures, systems, and components will perform satisfactorily in service is identified and performed in accordance with written test procedures which incorporate the requirements and acceptance limits contained in applicable design documents."

Regulatory Guide 1.68, "Initial Test Programs for Water-cooled Nuclear Power Plants", in Appendix A under Pre-operational Testing states, "Pre-Operational tests should demonstrate that structures, systems, and components will operate in accordance with design in all operating modes and throughout the full design range."

The Byron Startup Manual stated in Chapter 2.0, Definitions, that Pre-Operational Tests "will demonstrate the capability of structures, systems, and components to meet safety-related performance requirements." In paragraph 2.4.3, the Byron Startup Manual described Project Engineering as responsible for reviewing and approving all Pre-Operational Tests, and for providing Test Acceptance Criteria, and for ensuring Test Objectives are properly stated and met by Acceptance Criteria.

Contrary to the above, a test procedure was prepared, reviewed and approved by the licensee which failed to demonstrate the capability of the system to meet the performance requirements in the following examples:

a. Paragraph 5.2.5.1.a of the Byron/Braidwood FSAR states, "In the unidentified leakage weir box no normal leakage is expected and therefore its design allows detection and monitoring of 1 gpm of leakage. Weir box design will allow the detection system to respond to a 1 gpm increase in leakage within 1 hour." The containment floor drain sump and associated weir (which the above paragraph is describing) is designed such that leakage must first pass through an oil separator box before reaching the containment floor drain sump weir box. In the preoperational test 2.66.10, "Containment Drains", the licensee introduced a 1 gpm source of water directly to the containment floor drain sump weir box and monitored the time to produce an alarm. This test method completely bypasses the oil separator portion of the "system" and only results in a test of a portion of the system.

b. Paragraph 5.2.5.1.b of the Byron/Braidwood FSAR in describing the reactor cavity sump weir states, "The weir will detect and monitor a leakage rate of 1 gpm above the normal leakage rate. The weir box design will allow the detection system to respond to a 1 gpm increase within 1 hour." The reactor cavity sump weir box is an approximately 1 cubic foot box located at the extreme north end of the reactor cavity floor. The reactor cavity floor is stated by the licensee to contain approximately 504 square feet. In a situation where the cavity floor was initially dry and a leak occurred at or near the far end of the cavity floor, the whole cavity floor area may have to be covered before the leak would reach the weir box. The preoperational test introduced a 1 gpm leak rate directly into the weir and did not account for the cavity floor area at all. The preoperational test failed to demonstrate the ability to detect a 1 gpm leak within 1 hour when the normal leakage rate is zero and occurs at the far end of the cavity.

Response to Items 1 and 2

Corrective Action Taken and the Results Achieved

Reference (c) provided NRR with an advance copy of the requisite changes to Section 5.2.5 of the Byron and Braidwood FSAR in order to more accurately represent our design philosophy for RCS leak detection. Amendment No. 42 currently being processed contains the changes as stated in Reference (c) and are included herein as Attachment B.

As stated in Reference (c), leakage from the RCS can be determined by indication from a number of systems. The most direct method is monitoring RCS inventory. This can be accomplished either by direct indication or by performing a RCS water inventory balance. Net charging flow is displayed on the SPDS indication. If charging and letdown are balanced, net charging is zero. A leak would create an imbalance in charging and letdown and net charging would therefore indicate the magnitude of the deviation. The operator would utilize the systems available for the leak detection to determine the location of the leak and initiate appropriate corrective action. In our judgement, the combination of VCT level, charging and letdown flow provide a real time indication of the onset of RCS leakage. Attachment A provides a listing of mechanisms (systems) available to determine the location and magnitude of RCS leakage.

To address Region III's concerns regarding the oil separator portion of the containment floor drain collection sump, the Commonwealth Edison Company agreed to incorporate an additional surveillance into the technical specification under Section 4.4.6.1. This surveillance will require:

> "Once per 18 months, following refueling and prior to initial startup, verify that the oil separator portion of the containment floor drain collection sump has been filled to the level of the overflow to the containment floor drain unidentified leakage collection weir box".

This commitment will be reflected in our proposed tech specs for our Byron and Braidwood Stations.

Corrective Action to be Taken to Avoid Further Noncompliance

In our judgment, the two unresolved items and subsequent two items of noncompliance directly resulted from the inadequate representation of the Commonwealth Edison design philosophy for RCS leak detection in Section 5.2.5 of the Byron and Braidwood FSAR. We believe that this was an isolated occurrence and that our action to revise our FSAR as discussed in Reference (c), and reiterated herein adequately demonstrates that the regulatory requirements for RCS leak detection are being satisified for our Byron and Braidwood Stations.

Date When Full Compliance Will Be Achieved

In our judgment, Reference (c) dated March 23, 1983 provided commitments to resolve this matter. This issuance of Amendment No. 42 and our proposed Tech Specs will carry out these commitments.

Attachment A

The following mechanisms are available to monitor RCS leakage.

Tank level Indication

VCT
RCDT
PRT
Containment Sump
Cavity Sump
Pressurizer Level

Flow Indication

Charging Flow
Letdown Flow
Net Charging (SPDS Parameter)
Containment Floor Drain Sump Flow
Containment Equipment Drain Sump Flow
Cavity Sump Flow
Seal Injection Flow
Seal Leak Off Flow
Makeup Water Flow (Primary Water and Boric Acid)
Temperature Indication
Reactor Head Flange Leakoff Temperature
Downstream Relief Line Temperature
Containment Temperature

Other Indication

Containment Humidity
Containment Pressure
Containment Radiation Level
Containment Sump Pump Run Time
Cavity Sump Pump Run Time
RCDT Pump Run Time
RCS Water Balance Inventory
Steam Generator Sampling

Attachment B
Byron and Braidwood FSAR

5.2.5 Detection of Leakage Through Reactor Coolant Pressure Boundary

This section describes the means for detecting and monitoring leakage including reactor coolant to the containment area.

The reactor makeup control system is used to maintain proper reactor coolant inventory. VCT level is continuously recorded and quantities of boric acid and makeup water injected are totalized and flow rates recorded in the control room. This indication provides the operator an inferential measurement of RCS leakage. An RCS mass balance if performed when unidentified leakage is suspected and at the prescribed technical specification intervals. This provides early indication to the operator of potential unidentified leakage. Support systems to monitor and detect leakage, both identifed and unidentified are provided and described below.

5.2.5.1 Reactor Cavity and Containment Floor Drain Sumps

a. The containment floor drain sump contains a weir box for detecting and monitoring unidentified leakage. Leakage is routed to the unidentified leakage weir box through the containment floor drain system. In the unidentified leakage weir box no normal leakage is expected and therefore its design allows detection and monitoring of 1 gpm of leakage into the weir box. Signals from a transmitter in the weir box are recorded and alarmed in the main control room.

b. The reactor cavity sump collects leakage in the reactor cavity. Similar to the containment floor drain sump a weir box is provided in the sump to monitor and detect leakage. No normal leakage is expected. The weir box design will allow the detection system to respond to a one gpm increase in leakage into the weir box. The signal from a transmitter in the weir box is recorded and alarmed in the main control room.

c. An additional means of determining sump flow for the reactor cavity and containment floor drain sumps is provided by sump pump run time totalizing meters. This method will provide an indication of water processed through the sump.

5.2.5.2 Containment Radiation Monitoring

a. Particulate and gaseous containment radiation monitors are provided as part of the process radiation monitoring system. These monitors are discussed in Subsection 11.5.2.2.10 and listed in Table 11.5-1.