



Commonwealth Edison

One First National Plaza, Chicago, Illinois
Address Reply to: Post Office Box 767
Chicago, Illinois 60690

August 13, 1982

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Subject: Byron Station Units 1 and 2
Braidwood Station Units 1 and 2
Detection of Inadequate Core Cooling
NRC Docket Nos. 50-454, 50-455, 50-456,
and 50-457

Reference (a): June 7, 1982, letter from
T. R. Tramm to H. R. Denton.

Dear Mr. Denton:

This is to provide additional information regarding instrumentation to be installed at the Byron and Braidwood Stations for the detection of inadequate core cooling. Review of this information should help close Outstanding Item 9 of the Byron SER.

Attachment A to this letter is a cross-reference index which was prepared at the NRC's request. It correlates the information provided in reference (a) regarding the Byron/Braidwood inadequate core cooling instrumentation to documentation requirements 1 through 9 for Item II.F.2 of NUREG-0737. Additional information is provided where necessary and will be included in the FSAR amendment.

Please address further questions regarding this matter to this office.

One signed original and fifteen copies of this letter are provided for your review.

Very truly yours,

T. R. Tramm

T. R. Tramm
Nuclear Licensing Administrator

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ATTACHMENT A

Information Provided to Satisfy NUREG-0737 Documentation Requirements Regarding Inadequate Core Cooling Instrumentation

(Organized According to the Documentation Requirements of II.F.2)

(1) A description of the proposed final system including:

- (a) A final design description of additional instrumentation and displays;

The response to this item is provided in the following sections of the June 7, 1982 submittal:

Section 3.0 "System Design Description"
Section 3.1 "Sensors Design"
Section 3.1.1 "Subcooled Margin Monitoring System"
Section 3.1.2 "Heated Junction Thermocouple
(HJTC) System"
Section 3.1.3 "Core Exit Thermocouple (CET) System"

- (b) A detailed description of existing instrumentation systems (e.g., subcooling meters and incore thermocouples), including parameter ranges and displays, which provide operating information pertinent to ICC considerations;

The response to this item is provided in Section 3.1.3 of the June 7, 1982 submittal.

- (c) A description of any planned modifications to the instrumentation systems described in item 1.b above.

The response to this item is provided in Section 3.1.3 of the June 7, 1982 submittal.

(2) The necessary design analysis, including evaluation of various instruments to monitor water level, and available test data to support the design described in item 1 above.

The response to this item is provided in the following Sections of the June 7, 1982 submittal:

Section 1.1 "Summary of Activities"
Section 1.2 "Bases for ICC Instrumentation Selection"
Section 1.4 "Summary of Sensor Evaluations"
Section 1.4.1 "Subcooled Margin Monitor"
Section 1.4.2 "Resistance Temperature Detectors"
Section 1.4.3 "Heated Junction Thermocouple System"
Section 1.4.4 "Core Exit Thermocouple System"
Section 4.0 "System Verification Testing"
Section 4.1 "Pressure Sensors"
Section 4.2 "HJTC System Sensors and Processing"
Section 4.3 "Core Exit Thermocouples"

- (3) A description of additional test programs to be conducted for evaluation, qualification, and calibration of additional instrumentation.

The response to this item is provided in the last paragraph of Section 4.2 and Section 5.0 of the June 7, 1982 submittal.

- (4) An evaluation, including proposed actions, on the conformance of the ICC instrument system to this document, including Attachment 1 and Appendix A. Any deviations should be justified.

Our proposed ICC Instrumentation System conforms to the requirements of NUREG 0737 Item II.F.2 including Attachment 1 and Appendix B.

- (5) A description of the computer functions associated with ICC monitoring and functional specifications for relevant software in the process computer and other pertinent calculators. The reliability of nonredundant computers used in the system should be addressed.

The response to this item is provided in the following sections of the June 7, 1982 submittal:

Section 3.2.2 "Primary Displays"
Section 3.2.4.1 "Subcooled Margin Monitor"
Section 3.2.4.2 "Heated Junction Thermocouples -
Reactor Level"
Section 3.2.4.3 "Core Exit Thermocouple System"
Figure 3-1 (Sheet 2 of 2)

- (6) A current schedule, including contingencies, for installation, testing and calibration, and implementation of any proposed new instrumentation or information displays.

The current schedule is to have the Byron 1 ICC instrumentation system operational by fuel load (August 31, 1983).

- (7) Guidelines for use of the additional instrumentation, and analyses used to develop these procedures.

General guidelines for use of the additional instrumentation are being prepared by the Westinghouse Owner's Group as part of the effort undertaken to resolve NUREG-0737 Item I.C.1. Plant specific procedures will be prepared after the guidelines have been approved by the NRC. Minor departures from these guidelines will be necessary because the Byron/Braidwood heated junction thermocouple instrumentation covers a level range different from the standard differential pressure instruments.

There are two basic changes to be made:

- 1) Where the guidelines call for checking reactor coolant pump status to determine which level indication should be used (i.e., wide versus narrow), that step will be deleted. This occurs in steps 8 through 11 of the current version of guideline FR-C.1, "Response to Inadequate Core Cooling" and in the "Core Cooling Status Trees."
 - 2) The "Core Cooling Status Trees" currently specify 3.5 feet above the bottom of the active fuel as a branch point. The Byron/Braidwood procedures will specify a more conservative level in the range of our instrumentation. This level will be somewhere above the top of the fuel.
- (8) A summary of key operator action instructions in the current emergency procedures for ICC and a description of how these procedures will be modified when the final monitoring system is implemented.

Since Byron and Braidwood Stations are not operating plants, no interim emergency procedures for ICC are being prepared.

- (9) A description and schedule commitment for any additional submittals which are needed to support the acceptability of the proposed final instrumentation system and emergency procedures for ICC.

No additional submittals are planned.