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August 20, 1984

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

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

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

(b): July 6, 1984 letter from T. R. Tramm to H. R. Denton.

(c): August 13, 1982 letter from T. R. Tramm to H. R. Denton.

Dear Mr. Denton:

This letter provides additional information regarding the instrumentation being installed on the Byron/Braidwood units for the detection of inadequate core cooling. Information is presented regarding the procedures for use of the heated junction thermocouple (HJTC) level monitoring system, the display of subcooling margin, and the status of implementation of this instrumentation on Byron 1. NRC review of this information should permit closure of Outstanding Item 9 of the Byron SER without any license conditions.

Byron's emergency operating procedures have been written based upon the Westinghouse Owner's Group (WOG) "Emergency Response Guidelines." As indicated in section E.31 of the FSAR, two minor departures from the WOG Guidelines were necessary because the HJTC instrumentation covers a level range which is different from the reference plant's differential pressure instrumentation. These two changes were made with the concurrence of Westinghouse personnel responsible for the reference plant Guidelines. More accurate descriptions of these changes and the bases for the changes are provided below:

1) Where the guidelines call for checking reactor coolant pump status to determine which level indication should be used (i.e. wide versus narrow), those steps will be deleted. This occurs in steps 8 through 9 of the current version (Basic version) of guide FR-C.1, "Response to Inadequate Core Cooling" and in the "Core Cooling Status Tree". With this change, plant depressurization is conservatively initiated, regardless of vessel level when the core exit temperature exceeds 1200°F.

B001
1/1

2) The "Core Cooling Status Trees" currently specify 3.5 feet above the bottom of the active fuel as a branch point. Byron's instrumentation does not measure level in this range. The intent of the Basic ERG footnote was to measure a collapsed level indicating signficant core uncovery beyond that expected for a design basis small LOCA. For identifying transitions to BFR-C.1, Westinghouse recommends using core exit thermocouples greater than 1200°F only. This is applicable to foldout pages, BTS-2 and BFR-C.1. The B/B procedures eliminate this criterion, based upon the Westinghouse engineering recommendation, using instead 1200°F at the core exit thermocouples as a criterion.

The procedures incorporating these changes are available for NRC review.

One minor correction is necessary to the information presented in reference (b) regarding display of the subcooling margin. Attachment A to that letter indicated that the subcooling would be constantly displayed on the wide range SPDS iconic. Actually, the normal display is via the narrow-range SPDS iconic. The wide range iconic is displayed after a reactor trip.

Additional information regarding various displays of subcooling is provided in Figure 3-1 enclosed with this letter. This figure is similar to Figure 3-1 in reference (a), but it contains more detail regarding the various process computer displays and instrument input signals.

Installation of the instrumentation for the detection of inadequate core cooling is nearly complete at Byron 1. Computer interfaces and process computer software for CRT display of relevant parameters will be installed shortly. An implementation letter report will be submitted as soon as possible.

Please address any further questions regarding this matter to this office.

Very truly yours,

T. R. Tramm

T. R. Tramm
Nuclear Licensing Administrator

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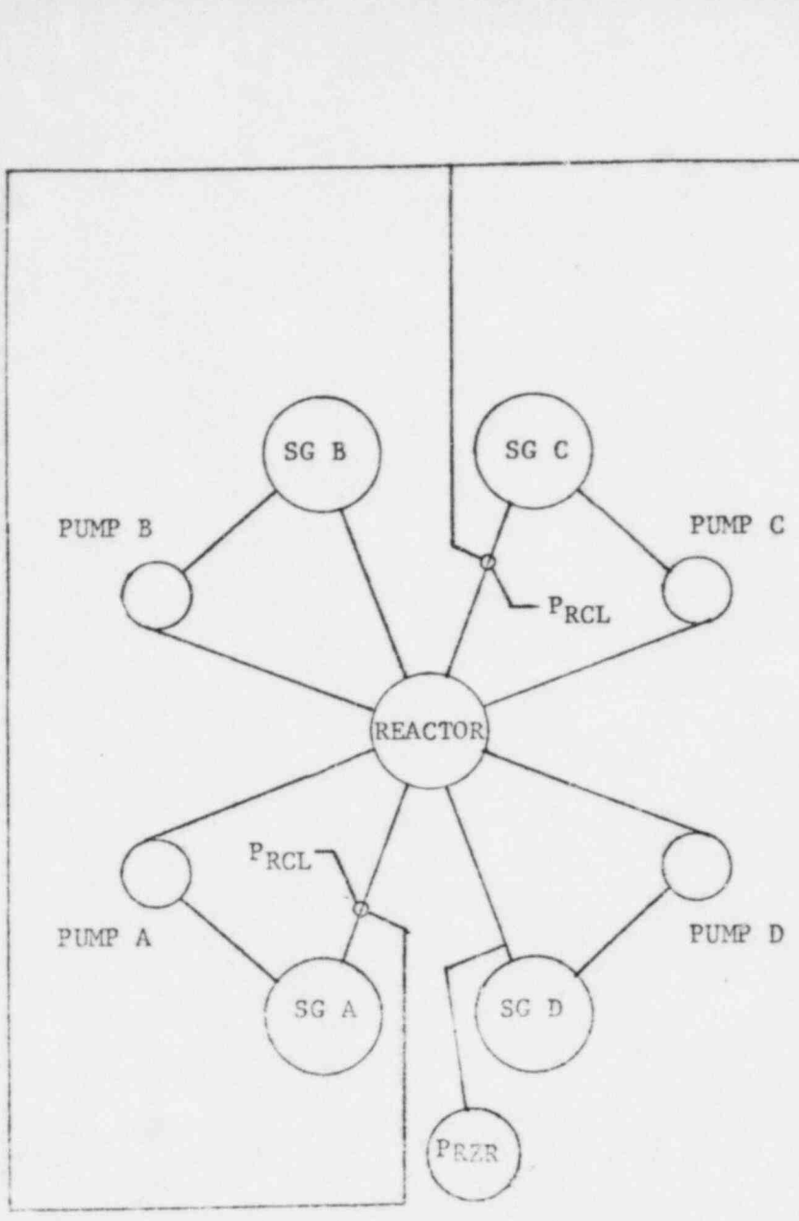
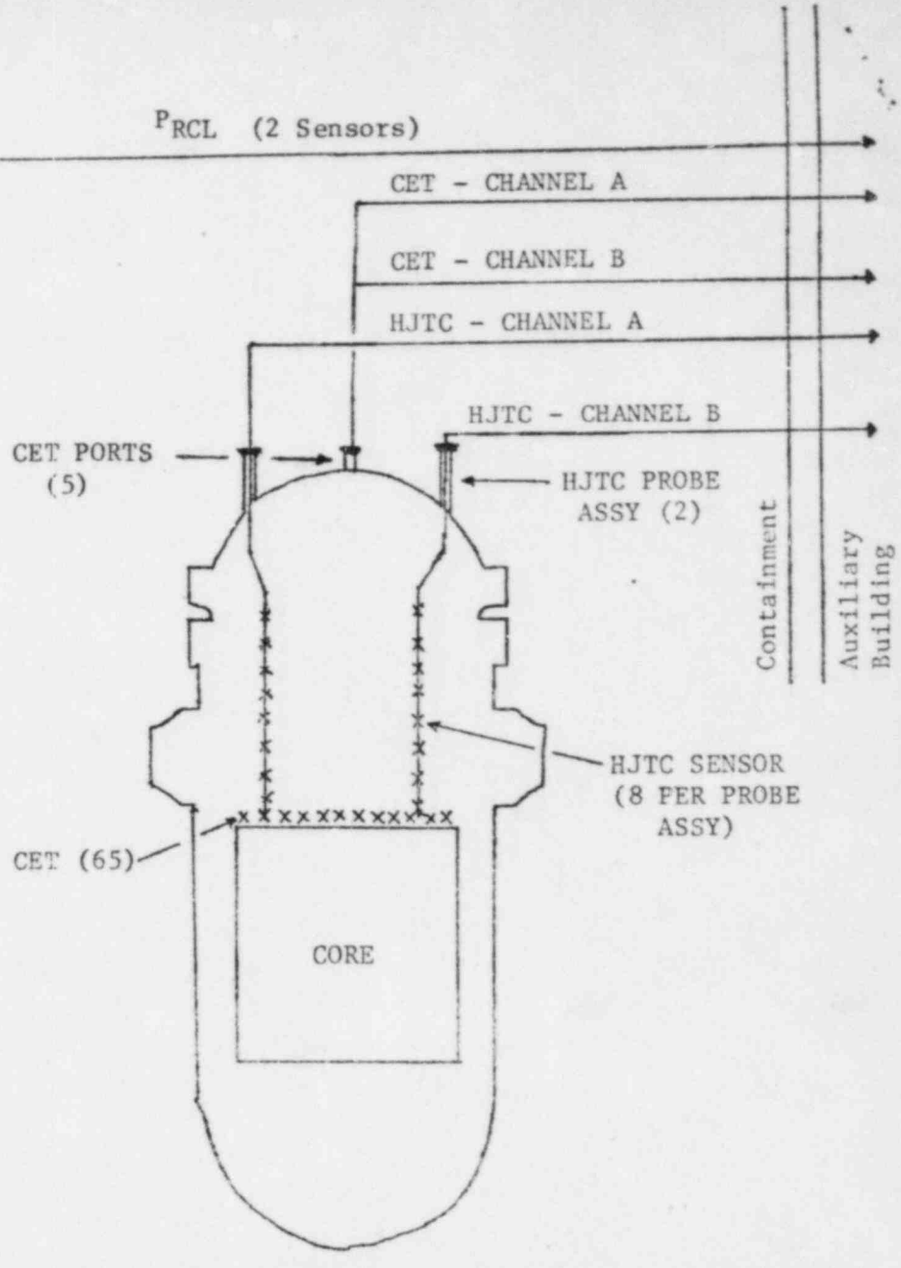
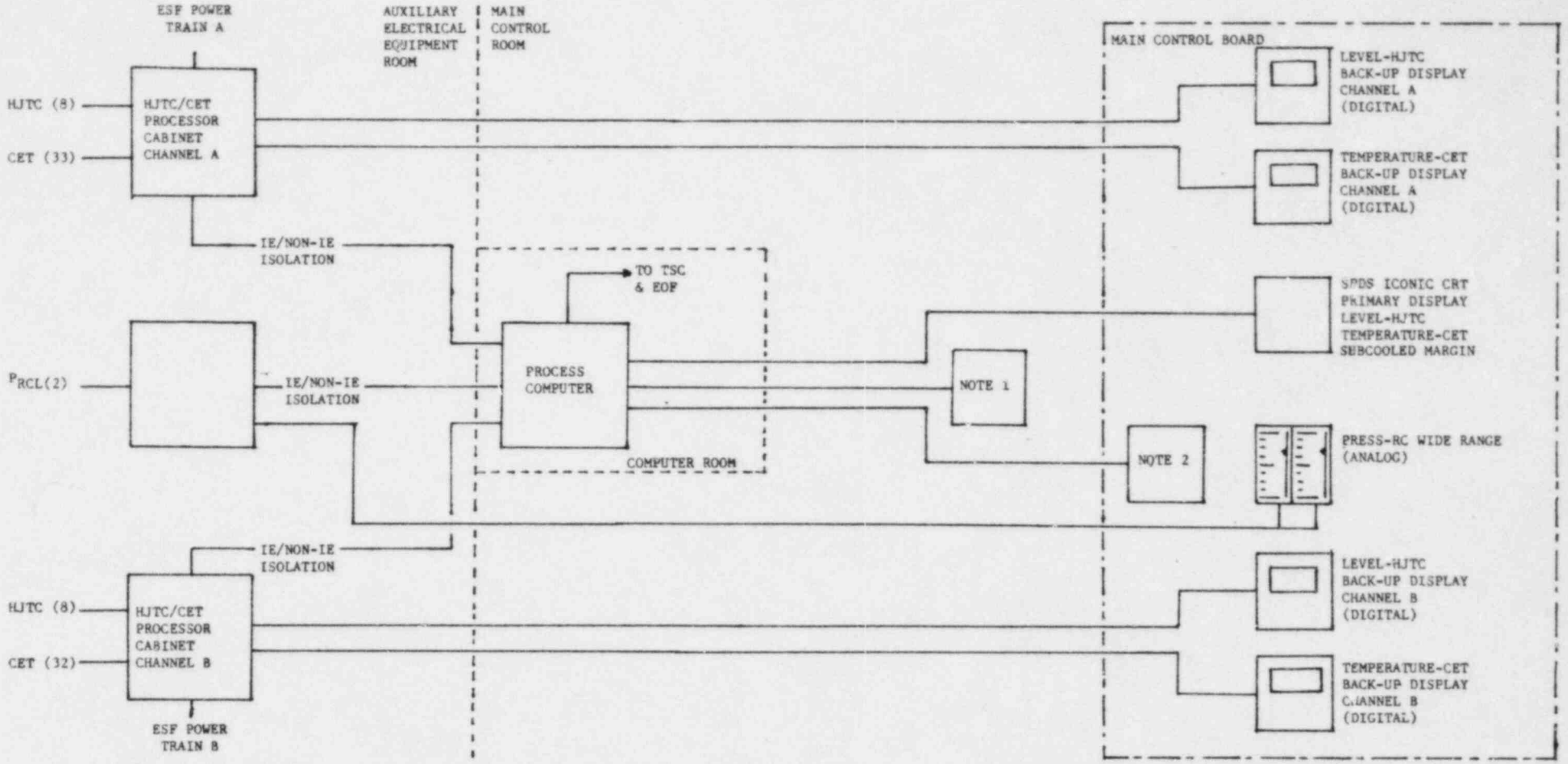


REACTOR COOLANT SYSTEM PLAN



REACTOR VESSEL ELEVATION

ICC DETECTION INSTRUMENTATION
SENSORS, PROCESSING AND DISPLAY
(SHEET 1 OF 2)
FIGURE 3-1



NOTES:
1. THREE MONITORS AND PRINTERS, COMPUTER DRIVEN, NON-DEDICATED FOR OPTIONAL ICC DISPLAY SUPPORT.
2. SIX ANALOG INDICATORS, TWO CONTINUOUS PEN RECORDERS AND ONE MONITOR, COMPUTER DRIVEN, NON-DEDICATED FOR OPTIONAL ICC DISPLAY SUPPORT.

ICC DETECTION INSTRUMENTATION SENSORS, PROCESSING AND DISPLAY
(SHEET 2 OF 2)
FIGURE 3-1