Docket Nos.: STN 50-454/STN 50-455
STN 50-456/STN 50-457

NOV 9 1984

Mr. Dennis L. Farrar
Director of Nuclear Licensing
Commonwealth Edison Company
Post Office Box 767
Chicago, Illinois 60690

Dear Mr. Farrar:

Subject: Request for Additional Information - Byron/Braidwood SPDS

We have reviewed your submittals concerning the Safety Parameter Display System (SPDS) for Byron/Braidwood and concluded that insufficient information was provided to complete our evaluation. Provide the information requested in the enclosure within 60 days of the date of this letter.

If any further clarification is needed, call L. N. Olshan, the Project Manager, at (301) 492-7070.

Sincerely,

R. J. Youngblood, Chief
Licensing Branch No. 1
Division of Licensing

Enclosure:
As stated

cc: See next page

CONCURRENCES:

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

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B. J. Youngblood

B. J. Youngblood, Chief
Licensing Branch No. 1
Division of Licensing

Enclosure:
As stated

cc: See next page

BYRON/BRAIDWOOD

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ENCLOSURE

REQUEST FOR ADDITIONAL INFORMATION

CONCERNING THE

BYRON/BRAIDWOOD

SAFETY PARAMETER DISPLAY SYSTEM

Each operating reactor shall be provided with a Safety Parameter Display System (SPDS). The Commission approved requirements for an SPDS are defined in NUREG-0737, Supplement 1. In the Regional Workshops on Generic Letter 82-33 held during March 1983, the NRC discussed these requirements and the staff's review of the SPDS.

The staff reviewed the SPDS safety analysis and implementation plan provided by Byron/Braidwood (Reference 1). The staff was unable to complete its evaluation because of insufficient information. The following additional information is required to continue and complete the review:

INSTRUMENTATION AND CONTROL SYSTEMS INFORMATION

420.01 ISOLATION DEVICES

Provide the following:

a. For each type of device used to accomplish electrical isolation, describe the specific testing performed to demonstrate that the device is acceptable for its application(s). This description should include elementary diagrams when necessary to indicate the test configuration and how the maximum credible faults were applied to the devices.

b. Data to verify that the maximum credible faults applied during the test were the maximum voltage/current to which the device could be exposed, and define how the maximum voltage/current was determined.

c. Data to verify that the maximum credible fault was applied to the output of the device in the transverse mode (between signal and return) and other faults were considered (i.e., open and short circuits).

d. Define the pass/fail acceptance criteria for each type of device.

e. Provide a commitment that the isolation devices comply with the environmental qualifications (10 CFR 50.49) and with seismic qualifications that were the basis for plant licensing.

f. Provide a description of the measures taken to protect the safety systems from electrical interference (i.e., Electrostatic Coupling, EMI, Common Mode and Crosstalk) that may be generated.

HUMAN FACTORS ENGINEERING INFORMATION

620.01 DATA VALIDATION

Describe the method used to validate data displayed in the SPDS. Also describe how invalid data is defined to the operator.

620.02 UNREVIEWED SAFETY QUESTIONS

Provide conclusions regarding unreviewed safety questions or changes to technical specifications.

620.03 IMPLEMENTATION PLAN

Provide a schedule for operator training, procedures and user's manuals for the implementation of the SPDS.

PROCEDURES AND SYSTEMS REVIEW INFORMATION

640.01 The Byron/Braidwood FSAR, Section E.17, Amendment 43, identifies seven plant functions considered in the selection of the Byron/Braidwood SPDS variables, and states that these are based upon NUREG-0696. In addition, the NRC staff uses Section 4.1(f) of the more recent NUREG-0737, Supplement 1, to identify Critical Safety Functions for SPDS.

a. Since the Critical Safety Functions specified in NUREG-0737, Supplement 1, (and NUREG-0696) do not correlate well with the plant function identified in Byron/Braidwood FSAR, Section E.17, particularly in the areas of Radioactivity Control and RCS Integrity, show how the variables proposed for the Byron/Braidwood SPDS satisfy the monitoring requirements for each of the five Critical Safety Functions specified in NUREG-0737, Supplement 1.

b. Identify variables, whether primary SPDS variables, secondary SPDS variables, or non-SPDS variables, which are readily available from the SPDS console.

c. The functions of certain variables seem to be omitted from the SPDS as described in the Byron/Braidwood FSAR. Variables whose SPDS function seems to have been overlooked in the Byron/Braidwood SPDS are:

1) Neutron Flux (Source, intermediate, and power ranges), (Reactivity Control) Range Uncertain
2) Hot Leg Temperature (Heat Removal)
3) Steam Pressure (Heat Removal)

4) RHR Flow (Heat Removal)
5) Cold Leg Temperature (Heat Removal, RCS Integrity)
6) Steamline (or Steam Generator) Radiation (Radioactivity Control)
7) Containment Isolation (Containment Conditions)
8) Containment Hydrogen Concentration (Containment Conditions)

Discuss how the SPDS functions of these variables are provided for by the variables of the Byron/Braidwood SPDS.

640.02 Describe how the Byron/Braidwood Emergency Recovery Guidelines were considered in generating the set of variables for the Byron/Braidwood SPDS.

640.03 Describe the program for validation of the Byron/Braidwood SPDS variables. In this discussion describe how the plant simulator, and/or control room walkthroughs, of transients and accidents will be used to demonstrate useability of the SPDS, covering instrument setpoints for systems acuations and operator actions.

Reference:

1. Letter to Harold R. Denton (NRC) from E. Douglas Swartz (Commonwealth Edison), Subject: NUREG-0737 Supplement 1 SPDS Safety Analysis, dated December 29, 1983.