

AUG 6 1984

Docket No.: 50-382

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Docket File 50-382

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ACRS (16)

Mr. R. S. Leddick  
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Dear Mr. Leddick:

Subject: Request for Additional Information - Waterford 3

The staff has reviewed your submittal dated April 13, 1984 concerning the proposed Safety Parameter Display System (SPDS) for Waterford and has concluded that insufficient information was provided to complete its evaluation.

You are requested to provide the information requested in the enclosure 30 days prior to exceeding 5% of rated power in order to allow the staff time for review to accomodate your schedule for SPDS implementation.

If you have any questions about this request, contact the project manager, J. Wilson, at (301) 492-7702.

Sincerely,

**ORIGINAL SIGNED BY**

George W. Knighton, Chief  
Licensing Branch No. 3  
Division of Licensing

Enclosure:  
As stated

cc: See next page

DL:LB#3  
JWilson/yt  
8/6/84

DL:LB#3  
GWNighton  
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Waterford 3

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REQUEST FOR ADDITIONAL INFORMATION

CONCERNING THE

WATERFORD - 3

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-C737, 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 Louisiana Power and Light (Reference 1). The staff was unable to complete the review 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. A commitment that the isolation devices comply with the environmental qualifications (10 CFR 50.49) and with the seismic qualifications which were the basis for plant licensing.

- f. 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 by the SPDS.

#### HUMAN FACTORS ENGINEERING INFORMATION

##### 620.01 HUMAN FACTORS PROGRAM

- a. On page 169 of the LP&L submittal, it is stated that the requirement to provide a continuous display of plant status is satisfied because:

...two SPDS displays are provided in the control room (and) the operator has the flexibility of maintaining the summary display on one screen while accessing the supplementary displays on the other screen...

The staff does not agree. Providing the option of continuously displaying information is not the equivalent of continuously displaying information. The system does not appear to provide a dedicated summary display or any cueing feature that would make the operator aware of plant status changes.

The staff requires that the licensee: 1) provide further commitment to provide a continuous display of plant status, such as:

a dedicated display that continuously displays the minimum parameter set necessary to assess the safety status of the plant, or

audio or visual cues that alert an operator to return to the primary display frame while viewing secondary information

or 2) provide further information explaining how the requirement for continuous display has been satisfied.

- b. The licensee states that the Technical Support Center and Emergency Operations Facility have SPDS function keyboards and terminals. The system design should assure that actions taken on the TSC and EOF Keyboards will not affect SPDS displays in the control room without the knowledge and consent of the control room operator. In addition, any simulation or test-mode displays should be obviously indicated as such on the displays, so as not to mislead control room operators.

The licensee should provide information regarding the possible effects of remote interfaces (e.g. TSC, EOF) on the control room SPDS displays.

The licensee should provide information regarding the identification of simulated or test-mode displays.

- c. Provide the rationale for the meanings assigned to the color codes orange and yellow. Define the term "special messages" in relation to the orange color code.
- d. Provide a list of the messages that may be generated by the system for display on the SPDS. Include short definitions/descriptions.
- e. Provide the rationale for using alphabetic codes to identify displays. The discussion should emphasize human factors principles employed. Explain why alphabetic codes were chosen instead of plant-specific abbreviations or acronyms.
- f. On page 142 of the LP&L submittal it is stated that non-safety related data is provided on the parameter summary display "for the convenience of the SPDS users outside the control room". Explain this statement in terms of why this information should not be suppressed on control room displays.
- g. Discuss the extent to which data generated from the detailed control room design review has been or will be used in the design of the SPDS, e. g. plant-specific conventions for color codes, symbology, abbreviations, acronyms.

620.02

#### DATA VALIDATION

Provide information describing which (if any) of the safety parameters are validated by comparison of redundant data points.

620.03

#### VERIFICATION AND VALIDATION PROGRAM

Provide a short description of the total system validation testing planned, that is, how the hardware, software, operators, training and procedures/manuals will be tested as an integrated system.

PROCEDURES AND SYSTEMS REVIEW INFORMATION

PARAMETER SELECTION

640.01           The licensee proposes the use of a demand signal Containment Isolation Actuation Signal, as a measure of containment isolation.

Provide discussion as to why this demand signal is a sufficient indicator of containment isolation and why more direct measures, such as valve position, are unnecessary.

PARAMETER VALIDATION TESTING

640.02           Identify the transient and accident sequence test cases used for performance tests of the SPDS. If a specific parameter is not testable in a fully simulated transient sequence, identify the source of the validation data for that parameter.

#### REFERENCES

1. Letter from K. W. Cook (LP&L) to G. W. Knighton (NRC) dated April 16, 1984 (with enclosure, "Safety Parameter Display System").