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WHITE,S.A. Tennessee Valley Authority

SUBJECT: Forwards Emergency Operating Instructions Insp Rept 50-260/88-200 on 880808-19.

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UNITED STATES
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WASHINGTON, D. C. 20555

September 28, 1988

Docket No. 50-260

Mr. S. A. White
Senior Vice President, Nuclear Power
Tennessee Valley Authority
6N 38A Lookout Place
1101 Market Street
Chattanooga, Tennessee 37402-2801

Dear Mr. White:

SUBJECT: BROWNS FERRY UNIT 2 EMERGENCY OPERATING INSTRUCTIONS INSPECTION (50-260/88-200)

This letter forwards the report and the executive summary of the emergency operating instructions (EOIs) inspection performed by an NRC inspection team during the period August 8-19, 1988. The activities involved are authorized by NRC Operating License No. DPR-52 for the Browns Ferry Nuclear Power Station (BFN), Unit 2. At the conclusion of the inspection, the team discussed the findings with the members of your staff identified in Attachment A of the enclosed inspection report.

Areas examined during the inspection included review of the EOIs, the documents used to develop the EOIs, the EOI validation and verification program, and the EOI training program; walkdown of the EOIs in the control room and plant; evaluation of operator performance of EOIs on your site-specific simulator; and performance of a human factors evaluation of the EOIs. An overview of the inspection and the team's findings are provided in the enclosed executive summary. Details of the inspection are provided in the enclosed inspection report.

The team determined that the BFN EOIs, when used by trained operators, can function adequately to mitigate the consequences of an accident. However, the team identified a number of weaknesses involving the development and implementation of the EOIs. Your attention is invited to the items detailed in Section 3 of the inspection report. These include the need for improved communications among control room personnel, improvement of in-plant communications systems, better definition of the duties of shift personnel, and improved staging of EOI related tools in the plant.

BFN management attention should be directed at the weaknesses noted above. Other items that the team considered needing management attention included evaluation of containment venting procedures, evaluation of personnel access to the reactor building during emergencies, and review of deviations of the EOIs from the documents that were used to develop them. Your responses to the identified weaknesses outlined in Section 3 of this report are requested within 60 days of receipt of this letter.

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The responses directed by this letter and its enclosure are not subject to the clearance procedures of the Office of Management and Budget as required by the Paperwork Reduction Act of 1980, PL 86-511.

In accordance with 10 CFR 2.790(a), a copy of this letter and enclosures will be placed in the NRC Public Document Room.

Should you have any questions concerning this inspection, please contact me or Mr. J. Cummins (301-492-0957) of this office.

Sincerely,

James G. Partlow, Director
Office of Special Projects

Enclosures:
1. Executive Summary
2. Inspection Report 50-260/88-200

cc w/enclosures:
See next page

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Mr. S. A. White

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EXECUTIVE SUMMARY

INSPECTION REPORT 50-260/88-200
BROWNS FERRY NUCLEAR POWER STATION

During the period August 8-19, 1988, an NRC inspection team evaluated the Browns Ferry Nuclear Power Station (BFN) emergency operating instructions (EOIs). The inspection was conducted to verify that the EOIs were technically accurate; that their specified actions could be physically carried out in the plant using existing equipment, instrumentation, and controls; and that the plant staff could correctly perform the procedures. The inspection also verified that the licensee's program for development and implementation of the EOIs complied with the requirements of Supplement 1 to NUREG-0737, "Requirements for Emergency Response Capability." The inspection was conducted in accordance with the guidelines in Temporary Instruction 2515/92, "Emergency Operating Procedures Team Inspection."

To evaluate the EOIs, the team performed the following activities:

- reviewed the EOIs and the procedures generation package submitted to the NRC for their development
- compared the EOIs with the owners' group emergency procedure guidelines (EPGs) and reviewed the licensee's justification for deviations of the EOIs from the EPGs for adequacy
- performed in-plant walkdown of the EOIs
- evaluated the EOIs during the execution of accident scenarios on the site-specific simulator
- performed human factors evaluation of the EOIs during all phases of the inspection.

SUMMARY OF SIGNIFICANT FINDINGS

It appeared to the team members observing performance of the accident scenarios on the simulator, that improved communications between control room personnel could have made the EOI accident response more effective. Specifically, the team observed instances where the unit operator was providing important information to the ASOS, but the ASOS was not listening because he was too involved in reading the EOIs and focusing on other problems in the plant. Also, interviews with BFN staff personnel and observations made during plant walkdowns indicated that in plant communications systems were not adequate to support the implementation of EOI appendices which required operations outside the control room.

Duties of shift personnel for responding to events were not clearly defined. There was no clear-cut assignment of responsibilities and roles nor an indication of who was qualified to perform tasks outside the control room when called for in the EOIs. The functions of the shift technical advisor and shift operations supervisor were not clearly defined.

It was apparent that during the first few minutes of some transients, the assistant shift operations supervisor (ASOS), who was responsible for reading the EOIs and directing the response to the accident, did not have time to follow the EOIs step by step. As a result, unit operators had to take actions such as controlling pressure before being directed to do so by the ASOS. After the initial transient, the ASOS had time to refer to the EOIs to ensure that all immediate actions had been correctly performed. The ASOS could then begin to use the EOIs to deal with the emergency by reading the steps and giving directions.

There appeared to be a lack of coordination among the BFN staff groups responsible for the detailed control room design review labeling program, plant labeling program, and EOI revisions. During the inspection, the team noted that these groups appeared to be functioning in a largely autonomous mode until a restart date is approached.

Although the procedures for containment venting were consistent with the Boiling Water Reactor Owners' Group guidance, the plant-specific analyses had not been done to confirm vent valve capability and reactor building integrity. No evaluations had been performed to confirm that vent path valves and dampers would function at expected flow and differential pressure conditions; this evaluation, however, was in progress during the inspection. Vent path ductwork was expected to fail inside the reactor building. In this case vented flow could be processed via reactor building ventilation to the filtered elevated release point, but the possible consequences of containment building pressurization had not been analyzed.

The effects of accident radiation levels in the reactor building on the operators' ability to perform local operations had not been analyzed. NUREG-0737, item II.B.2, and an NRC Confirmatory Order of July 10, 1981, required the evaluation of personnel access to the reactor building during emergencies. In its response, prepared before the current symptom-based EOIs were issued, the licensee concluded that the radiation levels would preclude reactor building entry, but that the previous event-based EOIs and plant design would support accident mitigation without reactor building reentry. The symptom-based EOIs require entry to compensate for equipment failures. Since the development and implementation of the current symptom-based EOIs, the licensee had not reevaluated its former position and analysis.

CONCLUSIONS

The EOIs were generally technically accurate and could be performed by the plant staff using existing plant equipment, instruments and controls.

Following the EOIs would be difficult in a rapidly developing event; however, it appeared that the EOIs, when used by trained operators, would function to mitigate the consequences of an accident.

The BFN staff demonstrated that the proper personnel, basic procedures, and program plans were in place to correct the problems with the EOIs identified in this report. Problems pertaining to personnel that will require management decisions and increased attention include: (1) improving communications between control room personnel and (2) defining the duties of shift personnel during emergencies.