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April 30, 1984

James L. Kelly, Chairman  
Atomic Safety and  
Licensing Board Panel  
U. S. Nuclear Regulatory  
Commission  
Washington, D. C. 20555

Dr. Richard F. Foster  
P. O. Box 4263  
Sunriver, Oregon 97702

Dr. Paul W. Purdom  
235 Columbia Drive  
Decatur, Georgia 30030

Re: Duke Power Company, et al.  
Catawba Nuclear Station, Units 1 and 2  
Docket Nos. 50-413/50-414 CL

Gentlemen:

In "Applicants' Response to Motion of Palmetto Alliance and Carolina Environmental Study Group to Readmit Contentions on Severe Accidents, Control Room Deficiencies and Lack of Financial Qualifications," Applicants stated that they would provide a copy of a letter they submitted to the NRC responding to each of the open items identified in the draft Safety Evaluation Report for control room design. A copy of that letter is enclosed.

Sincerely,

*Mark S. Calvert*  
Mark S. Calvert

Enclosure

cc: Service List

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DUKE POWER COMPANY

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April 9, 1984

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

Attention: Ms. E. G. Adensam, Chief  
Licensing Branch No. 4

Re: Catawba Nuclear Station  
Docket Nos. 50-413 and 50-414

Dear Mr. Denton:

Mr. T. M. Novak's letter of March 9, 1984 transmitted the preliminary draft Safety Evaluation Report for the Catawba detailed control room design review. Attached is a response to each of the open items contained in the subject report.

The response to item 5 also provides a partial response to Catawba SER Open Item 6, Instrumentation for Inadequate Core Cooling Detection and License Condition 7, Installation of Reactor Coolant Vents.

Very truly yours,

*H. B. Tucker / BT*  
Hal B. Tucker

ROS/php

Attachment

cc: Mr. James P. O'Reilly, Regional Administrator  
U. S. Nuclear Regulatory Commission  
Region II  
101 Marietta Street, NW, Suite 2900  
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NRC Resident Inspector  
Catawba Nuclear Station

Mr. Robert Guild, Esq.  
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Mr. Harold R. Denton, Director  
April 9, 1984  
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cc: Palmetto Alliance  
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Mr. Jesse L. Riley  
Carolina Environmental Study Group  
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bcc: M. R. Crews  
R. H. White  
C. L. Hartzell  
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N. A. Rutherford  
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SREC  
NC MPA-1  
NCEMC  
Group File: CN-801.01

1. Duke Power must provide a schedule for HED corrective actions that is acceptable to the staff. For HED corrective actions that will not be completed prior to licensing, Duke Power must provide justification for leaving the HED uncorrected or partially corrected.

Response:

A proposed schedule for the completion of HED corrective actions is contained in the Duke Power Supplement to Final Report for Catawba Nuclear Station Unit 1, dated May 6, 1983. In addition, the Duke Power letter from H. B. Tucker to H. R. Denton, dated February 20, 1984, discusses the schedule for specific HED corrective actions to be completed between fuel load and the end of the first refueling outage, and provides improvement in the original schedule for HEDs scheduled for completion during this period.

2. Duke Power must provide information describing the HEDs referred to management attention and stating the follow-up disposition and implementation of corrective actions for these HEDs.

Response:

Thirty-one HEDs were determined to be of a nature that required resolution by Catawba Nuclear Station management. Typical solutions for these HEDs included additional Operator training or emphasis; changes to station maintenance procedure; requisition of, or availability of special tools, step ladders, throat microphones, chart paper, etc. Most of these problems were noted due to the construction status of the unit and would have been resolved before fuel loading. In addition, two HEDs were identified during the Environmental Survey which were referred to station management. These HEDs concerned the cleaning of Control Boards and devices, and the poor contrast on computer CRTs.

The Control Room Review Team transmitted a description of each of these HEDs to station management. Supervision responsible for areas of station management to which the HEDs pertained reviewed the HEDs and proposed appropriate corrective actions to the Review Team. The Review Team reviewed the proposed corrective actions for approval prior to implementation.

Corrective actions for all management attention HEDs have been completed except for HEDs 276, 486, 519, and 606. The status of these HEDs is as follows:

HED 276 - Install warning signs in areas prohibited for walkie-talkie use.

Prohibition areas are designated, signs have been made and will be installed in designated areas by 6/1/84.

HED 486 - Backlighted switches on 1.47 Panel are hot to touch.

New LED type bulbs have been ordered as replacements. These bulbs will be installed as soon as they are received.

HED 519 - Frequency of Fire Detection Panel alarms reduces audibility of other Control Room alarms.

This system has been in test and check-out mode. After test completion, volume will be reduced to acceptable level and frequency of alarm occurrences will be low.

HED 606 - Present CRT monitors have poor contrast.

New type CRT monitors have been ordered and will be installed by 12/84.

3. Duke Power must provide information describing the results of the environmental survey and of the physical and engineering surveys of the control room communications equipment, availability and storage of reference materials, emergency and protective equipment, annunciators, and the computer system which would not be evaluated during the preimplementation audit. Any needed corrective actions shall be implemented on a schedule acceptable to the staff.

Response:

a. Environmental Survey

Gibbs and Hill, Inc. was retained to perform a lighting survey of the Catawba Control Room. The results of this survey were reviewed by the Control Room Survey Team to identify specific HEDs. In general, the lighting was in compliance with recommended guidelines; however, a few minor problems in portions of the Control Room were identified. HED C-2-153 covers the physical changes necessary to correct the identified problems.

In addition to the survey of Control Room lighting, surveys of the HVAC and sound environment in the Control Room; and the lighting, HVAC, and sound environment for the Auxiliary Shutdown Panel Areas were conducted by the Control Room Survey Team. Identified HEDs were assessed by the Control Room Review Team. The assessment results were that the sound and HVAC environments were in general compliance with recommended guidelines and that no changes were required in these areas, but several changes in the lighting for the Auxiliary Shutdown Area, due to glare or low illumination, were needed. HED C-1-701 covers the physical changes necessary to correct these problems.

Both HED C-1-701 and C-2-153 are described in Revision 4 of the Duke Power Response to Supplement 1, to NUREG-0737 dated March 28, 1984.

b. Communications equipment

A recent survey of the communications equipment was performed by the Control Room Survey Team. Installed equipment met all recommended guidelines and no HED corrective actions were required. Due to the construction status the following items (to be installed prior to fuel loading) were not installed at the time of the survey:

1. Fire Brigade Radio
2. NRC Red Phone
3. NOAA Radio



The design documentation for the installation of these items were reviewed and no HEDs were identified.

c. Emergency Protective Equipment

A recent survey of this equipment was performed by the Control Room Survey Team. Adequate fire protection equipment was available and located in designated areas of the Control Room. No HED corrective actions were required. The location and adequacy of the emergency breathing air system was also reviewed and no HEDs were identified.

d. Availability and storage of reference materials

This subject was covered in the Operating Experience Review. No problems were identified. In addition, a recent inspection found that access and storage requirements for procedures, drawings, and other necessary documents met recommended guidelines.

e. Annunciators

The annunciator system for the Catawba Control Room was reviewed in both the Task Analysis and Control Room Survey Activities. In addition, comments from station operators were received in the Operating Experience Review. A special study of the annunciator system was performed by the Control Room Review Team to assess the HEDs identified in these activities in an integrated manner. A solution package was developed which included typical changes such as re-engraving of certain windows, rearrangement of certain windows to other panels, and change in wording or abbreviations. These changes are scheduled to be completed under HED C-1-457. This HED is described in the Supplement to Final Report for Catawba Nuclear Station Unit 1, dated May 6, 1983.

f. Computer

The computer system, including the Operator interface with the keyboards CRT's, and printers, was reviewed in both the Task Analysis activity, and the Control Room Survey activities. In addition this subject was also covered in the Operating Experience Review. HEDs identified during these activities were assessed by the Control Room Review Team and those HEDs requiring physical solutions are included in the Supplement to Final Report Catawba Nuclear Station Unit 1, dated May 6, 1983. In addition, several HEDs to be resolved by management attention were transmitted to station management. These HEDs concerned the periodic replacement of printer ribbons, contrast on CRTs, alarm buffer increase, and the density of several graphic screens (see 2 above).

4. Duke Power must provide evidence that all required HED corrective actions are verified and that functional performance of the control room is validated after the HED corrections have been made in the control room.

Response:

HED solutions were developed by the Control Room Review Solution Teams, which were comprised of Instrumentation and Control Engineers, Mechanical/Nuclear Engineers, Senior Reactor Operators, and Human Factors Specialist. The recommended solutions were then assigned to the Control Complex Group of the Design Engineering Department for implementation. Two members of the Control Room Review Team's "core team" are now assigned to the Control Complex Group. In addition, the remaining personnel of the Control Complex Group served on the Control Room Survey Teams, and the Solution Teams during the Control Room Review. These personnel are familiar with both the Review and the proposed solutions, and are responsible for the implementation of detailed solutions through the Nuclear Station Modification (NSM) process. This process assures the installation of modifications in accordance with the NSM document package.

The proposed physical changes developed by the Control Room Review Solution Teams were portrayed on the full scale control board mockups used for the Review. Since HED solutions were integrated on the mockups, the effect of each solution on the Operator, as well as its relationship to other solutions, could be observed.

In addition, the Duke Power Emergency Procedure Validation Program provides an administrative process to ensure that a trained operating shift can manage emergency conditions using the plant-specific Emergency Procedures. This validation process evaluates the adequacy of the Operator/Procedure/Control Room interface in handling emergency situations. The program provides both an initial validation and an on-going validation process.

5. Duke Power must provide discussion of control room modifications and additions made or planned as a result of other post-TMI Actions (such as controls and displays for inadequate core cooling and reactor vents) and as a result of lessons learned from the Salem ATWS events.

Response:

NUREG-0737, Items II.B.1, II.D.3, II.F.1 and II.F.2 resulted in modifications to the displays and controls in the Catawba control room. These TMI items were also incorporated into the emergency procedures as appropriate. As discussed in Duke Power's response to Supplement 1 to NUREG-0737, operators have been trained on these procedures and the upgraded emergency program will be fully implemented by fuel load.



Task Analyses for Inadequate Core Cooling and for an ATWS event were conducted by the Task Analysis Team during the Control Room Review using Westinghouse Emergency Response Guidelines FR-C.1 and ECA-1. HEDs identified during the Task Analysis activities were assessed by the Review Team and required HED corrective actions are described in the Supplement to Final Report, Catawba Nuclear Station, Unit 1, dated May 6, 1983.

In addition, Duke Power performed a review in response to Generic letter 83-28, dated July 8, 1983, concerning the Salem ATWS Event. No additional Control Room changes were identified as a result of this review.

6. Labeling on HED C-1-424E

Response:

It was Duke Power's intent to add improved labeling to the switches in this system; however, additions to this system since the HED was identified have required the rearrangement of these switches to accomodate the additional control devices. During this rearrangement the switches were realigned to place train "A" switches on the left and train "B" switches on the right. This action fully corrects the original HED.