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November 23, 1982

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:

Dr. K. N. Jabbour's October 15, 1982 Meeting Summary transmitted a list of concerns and open items which resulted from a September 7-9, 1982 meeting with the Instrumentation and Control Systems Branch. Attached is a response to the following items:

1. Instrumentation Used to Initiate Safety Functions

2. High Energy Line Breaks and Consequential Control System Failures

3. Key-Locked Switches Used to Override Isolation of HVAC Systems.

Very truly yours,

H.B. Tucker/ROS

Hal B. Tucker

ROS/php
Attachment

cc: Mr. James P. O'Reilly, Regional Administrator
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Mr. P. K. Van Doorn
NRC Resident Inspector
Catawba Nuclear Station

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cc: Mr. Robert Guild, Esq.
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Mr. Henry A. Presler, Chairman
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1. Instrumentation Used to Initiate Safety Functions

As part of a broad effort within Duke Power to upgrade control rooms, emergency response capabilities, and procedures, Duke is conducting a Control Room Design Review (CRDR) for each individual unit at each station.

While the scope of the Control Room Review is directed toward a human factors review of the design adequacy and operability of the existing control room, the other areas of concern such as the Upgraded Emergency Procedures, SPDS, and the inclusion of post accident monitoring instrumentation will be coordinated with the Control Room Review. Integrating these areas of concern with our primary emphasis of improving our emergency response capability, the objective of the CRDR will be to identify Human Engineering Discrepancies (HEDs) in the man-machine interfaces of the control room, determining the extent and importance of the HEDs, and developing and implementing modifications and training as necessary to resolve significant discrepancies.

A major objective in this effort is to identify the instrumentation and control requirements of the control room crew for emergency operation (as defined by the Westinghouse Owners Group Emergency Response Guidelines) and to ensure that the required systems can be efficiently and reliably operated under the conditions of emergency operation by available personnel. The presence or absence of instruments and equipment to support emergency operation will be determined and the human engineering suitability of available instrumentation will be evaluated.

Guidance for the Control Room Review has been under development by the NRC and other industry groups. We concur with the basic objectives and have subsequently developed our review plan to fulfill the intent of the guidance provided. The Control Room Review is therefore the appropriate place to identify the absence or presence of required instrumentation and to evaluate the effectiveness of such devices. Furthermore, in order to ensure adequate human factors consideration for all modifications to the control room that are considered after the CRDR, the line organizations responsible for station modifications will develop necessary criteria, procedures, and controls to evaluate the human factors acceptability of proposed modifications to ensure proper implementation. This activity coordinated with the continuous procedures upgrade effort and, thus, everchanging lists of instruments and controls will assure that the appropriate instrumentation is available to the operator.

The Control Room Design Review Plan presented to the NRC Staff (primarily the Division of Human Factors Safety) May 13, 1982 will be formally submitted on the Catawba docket. Following that meeting with the NRC, the CRDR commenced and is presently underway.

If you have any questions concerning our intent in the review or how we meet the intent of identifying and evaluating required instrumentation, we invite you to visit our general offices to review our Control Room Design Review activities.

2. High Energy Line Breaks and Consequential Control System Failures

The following presents Duke's response to the NRC request to perform a review to determine what, if any, design changes or operator actions would be necessary to assure that environments induced by a high energy line break will not cause an electrical non-safety grade control system failure to complicate the event beyond the FSAR analysis. A review was performed for Catawba by Westinghouse and Duke Power establishing the scope of systems to be analyzed for the review of IE Information Notice 79-22. The following systems were identified and were subsequently analyzed:

Steam Generator PORV Control System
Pressurizer PORV Control System
Main Feedwater Control System
Automatic Rod Control System

The analysis entailed identification of electrical system components, location of these components, classification as safety or non-safety and classification as being in or out of high energy line break area.

The results of the analysis showed that the Pressurizer PORV Control System and the Main Feedwater Control System do not contain non-safety grade control equipment which is exposed to environments resulting from a high energy line break.

The Steam Generator PORV Control System and the Automatic Rod Control System contain non-safety control equipment which is exposed to environments resulting from a high energy line break. However, the analysis concluded that the present design employs sufficient equipment temperature withstanding capability, safety grade overrides (such as the Steam Generator PORV closure solenoids) and other design features to provide adequate assurance that high energy line breaks will not cause non-safety control system failures to complicate the event beyond the FSAR analysis.

Based on the above, no design changes or operator actions are needed to address this issue.

3. Key-Locked Switches Used to Override Isolation of HVAC Systems

In our September meeting the Instrumentation and Control Systems Branch expressed concerns over the present control of the Control Room air intake valves (1VC5B, 1VC6A, 2VC5B and 2VC6A). These valves are controlled by individual key operated switches which, when placed in the "Emergency Open" position, will bypass the Chlorine Detectors, Smoke Detector and Radiation Monitor located in the intake duct. The ICSB's concerns are:

1) Bypassing a faulty signal from any of the monitors would also bypass a subsequent true signal from both of the other monitors.

2) The ICSB is concerned that the keys to the switches may not be available when needed to control the valves.

To resolve these concerns, Duke will modify the control circuits of the intake valves. The controls will be revised as follows:

The key operated switch will be replaced with a non-key-operated three position selector switch. The left position will be maintained and marked "close", the center position will be maintained and marked "open", and the right position will be spring returned to center and will be marked "reset".

The switches will normally be placed in the "open" position. When in this position the valve will close automatically upon receiving a high signal from any of the monitors. Once closed, the valve will remain in the closed position until reset by the operator regardless of the status of the initiating signal. To reopen the valve, the operator must wait a preset time (in the one to two minute range), turn the switch to the "reset" position, and then allow it to return to the "open" position. The remaining detectors will still be capable of reclosing the valve. The initiating detector will be available for closing the valve again after the signal from the detector has been cleared. No automatic control functions are provided for the "close" position.

Audible control room alarms will still be provided to alarm on high signals from the monitors and whenever any of the valves are closed.