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April 30, 1982

NUCLEAR PRODUCTION DEPARTMENT

U. S. Nuclear Regulatory Commission
Office of Nuclear Reactor Regulation
Washington, D. C. 20555

Attention: Mr. Harold R. Denton, Director

Dear Mr. Denton:



SUBJECT: Grand Gulf Nuclear Station
Units 1 and 2
Docket Nos. 50-416 and 50-417
File: 0260/0272/L-344.0j
NRC Review of Human Factors Engineering
Resolutions
AECM-82/178

On April 14, 1982, Mr. Dick Eckenrode of your Human Factors Engineering Branch conducted a pre-fuel load review of the Grand Gulf control room and remote shutdown panels. The purpose of the review was to perform a final approval on the implementation of the human factors resolutions required for fuel load. As a result, two concerns were identified that needed additional discussion prior to closing the pre-fuel load review. Our response to these review concerns are provided in the attached human factors item 99 (finding 5.23) and item 185 (finding 10.4). Also, as a clarification to human factors item 101 (finding 5.25), appropriate chart paper for all recorders was provided in accordance with the resolution to this item. However, since the initial ordering minor changes were made on the scales to several recorders and new chart paper had to be reordered. The new chart paper is not available at this time, but will be installed as soon as it is received from the vendor.

In addition, a NRC Internal Memorandum from J. Kramer to R. Tedesco, entitled "Grand Gulf Unit 1 Control Room Design Review SER Supplement" dated April 2, 1982, indicates that two open items remain to be closed in the GGNS SER. In discussion with Mr. Eckenrode, the open item on the final installation of the labels and locational aids on the main control room panels and Remote Shutdown panels was approved during his onsite review with no additional action needed. The back panel labeling portion of this same open item will be evaluated during the long term design review as committed under HFE item 115 (finding 7.12) of AECM-81/291. Therefore, this open item should be closed with no additional resolution to be performed. The remaining open item on the control room and remote shutdown panel environmental survey will be performed as indicated in the NRC memorandum.

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This letter should resolve the remaining actions that were to be performed for the human factors review prior to fuel load. Please advise if any additional information is required.

Yours truly,



L. F. Dale

Manager of Nuclear Services

SAB/SHH/JDR:lg

Attachments

cc: Mr. N. L. Stampley (w/a)
Mr. R. B. McGehee (w/a)
Mr. T. B. Conner (w/a)
Mr. G. B. Taylor (w/a)

Mr. Richard C. DeYoung, Director (w/a)
Office of Inspection & Enforcement
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Mr. J. P. O'Reilly, Regional Administrator (w/a)
Office of Inspection & Enforcement
U. S. Nuclear Regulatory Commission
Region II
101 Marietta St., N.W., Suite 3100
Atlanta, Georgia 30303

<u>ITEM</u>	<u>PRIORITY</u>	<u>FINDING</u>
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99	1	5.23
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Some pushbutton controls use indicator lights that have a clear outer bulb with an inner gas discharge element that emits a pale blue glow when the light is turned on. It is difficult to readily determine whether these lights are on or off. In addition, these indicator lights conventionally should be white instead of blue.

RESPONSE

MP&L has investigated the use of brighter neon bulbs for the white indicator lights being used on the various main control room panels. However, during this investigation it has become apparent that brighter neon bulbs are severely limited and may prove difficult to obtain such bulbs in the future. In addition, these bulbs would still inherently glow blue instead of white.

Therefore, to resolve this concern the neon bulbs are being replaced with single filament incandescent bulbs. Bulb/filament redundancy as required by Finding 5.22 cannot be provided for these applications due to the existing design of the control board inserts. This resolution will be implemented prior to fuel load.

NRC CONCERN

Some of the new incandescent bulbs that have been installed are excessively hot and are melting the outer lens around the bulb.

RESOLUTION

Several of the newly installed incandescent bulbs have manufacturing defects resulting in a higher than normal current flow through the bulb. This leads to more heat being dissipated through the filament causing the lens to melt. MP&L is working with the bulb vendor to correct this problem. The defective bulbs are being replaced with new bulbs that have been tested prior to installation. By pre-testing the bulbs and with the anticipated vendor resolution, this matter is not expected to be a future concern.

ITEM PRIORITY FINDING

185 1 10.4

Some Bailey flow controllers have display response that is reversed from the associated control action. When the right-hand pushbutton (OPEN) is depressed, the display pointer moves to the left (0%). When the left-hand pushbutton (CLOSE) is depressed, the display pointer moves to the right.

RESPONSE

The Bailey controllers in the control room will be evaluated to determine which controllers have final control element (i.e. valve) response that is reversed from control action. On panel P680, where "split" controllers are used, the control stations will be set up so that movement of the display pointer to the right corresponds to increasing control action (i.e. valve opening) and will be caused by pushing the right-hand pushbutton (OPEN). On other panels, where "unitized" controllers are used, this modification cannot be easily made. For those controllers a label will be added to the output meter which indicates that leftward movement of the pointer corresponds to valve opening and vice-versa. This discrepancy will be corrected prior to loading fuel.

NRC CONCERN

Seven of nine controllers identified per this concern were resolved, however, the "Generator Stator Cooling Temperature" and the "Generator Hydrogen Temperature" Bailey Controllers on the P680 panel are not being modified prior to fuel load as indicated by the response to this finding.

RESOLUTION

The 6 volt power cable from the manual auto station to the control unit which is necessary to make the control action indication change was not available for installation prior to fuel load. Neither the "Generator Stator Cooling Temperature" nor the "Generator Hydrogen Temperature" are required for fuel load operations. These controllers will be modified as required prior to 5% power.