

SOUTH CAROLINA ELECTRIC & GAS COMPANY

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O. W. DIXON, JR.
VICE PRESIDENT
NUCLEAR OPERATIONS

June 11, 1982

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

Subject: Virgil C. Summer Nuclear Station
Docket No. 50/395
Control Room Human Factors Review

Dear Mr. Denton:

On April 5 and 6, 1982, Mr. Serig and Mr. Ramiraz of the NRC Staff visited the Virgil C. Summer Nuclear Station to review the modifications made as a result of Human Factors Reviews. As a result of this review several items were identified which were not complete, others required further documentation and several new concerns were identified. This letter provides the status of these items and the additional documentation requested. The HED numbers from SER supplement No. 1 are used for reference where applicable.

- 2.3a The pressurizer master level controller modification is complete as committed.
- 3.0g The subcooling monitors were energized and found to provide good visual access to the plasma display for a fifth percentile female operator (55-56 inch standing eye height).
- 4.1c The service water pump alignment indicators have been checked and found to function properly. Startup testing activities required deliberate misalignment of these pumps which gave the correct "dual status" misalignment indication. When the plant is in operation the service water system must be properly aligned. This will be confirmed by the pump alignment indicators.
- 5.0f The temporary labels found on the radiation monitoring panels have been removed and replaced with permanent labels, where applicable.
- 5.0h The printers in the plant computer console have been labeled, as requested.

Boo!

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- 9.0f The ability of a minimum complement of operators to shut the plant down from outside the control room utilizing existing procedures and the control room evacuation panels has been demonstrated by actual performance of a shutdown during hot functional testing. This test was witnessed by the NRC Resident Inspector.
- 9.0h The plant page system volume in the control room will be adjusted as indicated in our letter dated 11/25/81, prior to fuel load.
- 5.0a Demarcation and group labels have been provided for all status light and monitor light groups.
- 9.0f Three flow indicators on the control room evacuation panels have square root scales. These include letdown flow and charging flow on the "A" panel and boric acid bypass flow on the "B" panel. The letdown flow and boric acid bypass flow indicators are used to confirm the presence or absence of flow. Since the operator has only the ability to isolate these flows and not the ability to modulate them, accurate flow measurement is not required. The operator controls charging flow to maintain acceptable pressurizer level using a charging flow controller and indicator and level indicator on the panels. The charging flow indicator provides process feedback to confirm modulation and is not required for accurate indication of absolute values. On this basis, the use of square root scales for these parameters is acceptable. Extensive modifications would be required to make these indications linear.

Monitor Light Description

The purpose of the ESF monitor lights is to aid the operator in confirming proper component alignment during normal plant operation and post accident situations. As a result of the Human Factors Study, the ESF monitor lights were rearranged into four distinct groups. This arrangement helps the operator locate the pertinent group and recognize patterns within that group. Demarcation and group labels have been used to separate and identify the groups.

Operation of the four distinct groups of displays of the ESF monitor lights is as follows:

1. Most of the monitor lights in the Safety Injection display are dim during normal operation. Some of the valves or equipment displayed on ESF monitor lights must be operated during normal operation (such as letdown orifice isolation valves)

causing their lights to indicate bright. After safety injection actuation, all the lights should be dim indicating to the operator that the components are properly aligned.

2. Most of the Safety Injection Phase A monitor lights are dim during normal operation. There are, however, some exceptions during normal plant operation where some lights may not be dim. Following safety injection and phase A isolation all the lights within this display should be bright indicating the components are properly aligned.
3. The Cold Leg/Hot Leg Recirculation displays are dim during normal operation. During a safety injection the lights within the display will remain dim. The lights to indicate proper alignment of the components during cold leg or hot leg recirculation mode will change to bright. The change from cold leg recirculation to hot leg recirculation is made fourteen hours after the initiation of Safety Injection. Some lights will be bright in one mode only.
4. All monitor lights in the Reactor Building Spray/Containment Isolation Phase B display will be dim during normal operation. Following actuation of the Reactor Building Spray/Phase B isolation the lights within the display should be bright indicating proper alignment.

Trend Recorder Paper

Trend recorder paper with the correct scale has been ordered and will be loaded into the trend recorders upon receipt.

Communication with Breathing Apparatus

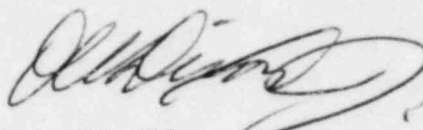
Operators who are required to wear breathing apparatus will use either headsets with their plant radios, or voice amplifiers with throat microphones. The radio headsets have a microphone which is used as a throat mike to improve pickup. The use of either of these devices (headsets or voice amplifiers with throat mikes) provides for effective communication in high noise areas when breathing apparatus is worn.

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Moduflash Pushbutton Engraving

The engraving on the Moduflash pushbutton of concern was changed to read "Temp/Flow".

With the completion of these items, we understand that we have completed all modifications required for an operating license. The Resident Inspector can confirm these items, if requested. If you have any further questions, please contact us.



O. W. Dixon
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