

SOUTH CAROLINA ELECTRIC & GAS COMPANY

POST OFFICE 764

COLUMBIA, SOUTH CAROLINA 29218

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

April 30, 1984

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

Subject: Virgil C. Summer Nuclear Station  
Docket No. 50/395  
Operating License No. NPF-12  
Inadequate Core Cooling,  
NUREG-0737, II.F.2

Dear Mr. Denton:

In Mr. T. M. Novak's letter dated January 12, 1984, on Generic Letter 82-28 Response, NUREG-0737, Item II.F.2, the NRC requested additional information on the Reactor Coolant Inventory Tracking System, Core Exit Thermocouple System and Subcooling Margin Monitor System utilized at the Virgil C. Summer Nuclear Station. Responses to items 1 and 2 of enclosure 2 of the referenced letter were provided in our letter to you dated February 17, 1984; the additional information requested in enclosure 2, item 3 and in enclosure 3 is provided below.

Enclosure 2, Item 3

The staff requested that South Carolina Electric and Gas Company (SCE&G) justify that the caution alarm setpoints on the subcooling margin monitor will provide sufficient margin for operator action.

Response

The subcooling margin monitor does not provide an alarm which requires the operator to take immediate action to prevent core damage. The subcooling caution alarm setpoints (15° for T/C input, 25° for RTD input) are selected based on normal operating parameters and not operator time response. During normal operations, the margin of subcooling is approximately 20°F based on T/C inputs and 29° F based on RTD inputs. The caution alarm must be set below the normal operating temperatures to preclude spurious alarms. During normal operation, protection against departure from nucleate boiling is provided by the low pressurizer pressure and overtemperature  $\Delta T$  reactor trips, not by operator action. During accident conditions, core protection is provided by implementation of appropriate emergency operating procedures. These procedures direct operator response to prevent the core from reaching a point of inadequate cooling. The immediate action for a caution alarm on the subcooling monitor is to verify that inadequate core cooling conditions exist by observing indications on the

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Core Subcooling Monitor Panel and RCS temperature and pressure. If inadequate core cooling is confirmed, then the operator is directed to take further supplemental actions to correct the condition.

Enclosure 3, Implementation Letter Report Content, Items 1-4

(1) Provide notification that the system installation, functional testing, and calibration is complete and test results are available for inspection.

Response

The Reactor Vessel Level Instrumentation System (RVLIS) was installed prior to November 15, 1981. The initial calibration was completed and is documented in phase one startup test procedures. The functional testing was completed satisfactorily and is documented in another phase one startup test procedure. This documentation is available for inspection at the Virgil C. Summer Nuclear Station.

(2) Provide a summary of licensee conclusions based on test results, e.g:

- (a) the system performs in accordance with design expectations and with design error tolerances; or
- (b) description of deviations from design performance specifications and basis for concluding that the deviations are acceptable.

Response

During testing, the RVLIS has performed in accordance with design expectations and within design error tolerances. Therefore, no changes were required to be made to the performance specification.

(3) Provide a description of any deviations of the as-built system from previous design descriptions with any appropriate explanation.

Response

There are no major deviations in the RVLIS as-built system from that described to the NRC in the letter from T. C. Nichols, Jr. to H. R. Denton dated December 30, 1980. However, there are some minor changes in the ranges of the level indicators from those listed in FSAR

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Table 7.5.1. This table lists the Reactor Vessel Level indicators with ranges of 0-100%. The ranges listed in this table were based on preliminary design information and the indicators as actually installed have labels and ranges as follows:

Upper Plenum Level	60-110%
NR Level	0-110%
WR Level	0-110%

Based on additional experience with the system, Westinghouse has recommended that we modify our system to include refinements in indicator titles and ranges as follows:

Upper Range	64-120%
Full Range *	0-120%
Dynamic Head **	0-120%

\* No RCP running

\*\* One or more RCP running

Please note that what is now titled Upper Plenum Level will be titled Upper Range; what is now titled Narrow Range (NR) will be titled Full Range; and what is now titled Wide Range (WR) will be titled Dynamic Head.

This modification and the corresponding recalibration of the associated transmitters are scheduled for implementation during the first refueling outage currently planned for October, 1984. The FSAR and the appropriate procedures will be revised at that time to reflect the revised titles and ranges.

The extension of the Dynamic Head indicator to 120% is based on analytical results that show full power readings of approximately 108-112%. At zero power this indicator will read approximately 100%. The Upper Range and Full Range indicators are extended to match the Dynamic Head indicator for human factors reasons.

(4) Confirm that the EOPs used for operator training conform to the technical content of NRC approved EOP guidelines (generic or plant specific).

#### Response

The current Emergency Operating Procedures (EOPs) are based on the Westinghouse Emergency Operating Instructions which were current in 1981/1982. These EOPs were reviewed and accepted by the NRC in the

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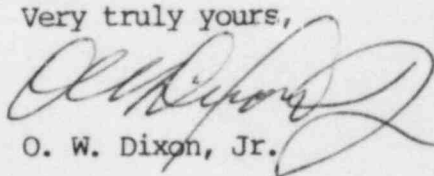
following documents:

- a. Supplement 4 to the Virgil C. Summer Nuclear Station Safety Evaluation Report.
- b. Region II Inspection Report 50-395/82-28.
- c. NRC Memorandum from William G. Kennedy to Hugh Thompson, Jr., "Reevaluation of the Virgil C. Summer Emergency Operating Procedures," dated 02/01/82.

The EOPs are currently being revised in accordance with the Westinghouse Owners Group Emergency Response Guidelines, Revision 1. Operator training and implementation of the revised EOPs will be completed prior to startup after the first refueling.

Should there be any questions, please notify us at your convenience.

Very truly yours,



O. W. Dixon, Jr.

JG:OWD:tdh/gj

cc: V. C. Summer  
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