

May 22, 1989

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Docket No. 50-395

Mr. O. S. Bradham  
 Vice President, Nuclear Operations  
 South Carolina Electric & Gas Company  
 Virgil C. Summer Nuclear Station  
 Post Office Box 88  
 Jenkinsville, South Carolina 29065

Dear Mr. Bradham:

SUBJECT: CORRECTION TO AMENDMENT NO. 76 REGARDING CONTAINMENT STRUCTURAL  
 INTEGRITY - VIRGIL C. SUMMER NUCLEAR STATION, UNIT NO. 1  
 (TAC NO. 62803)

Amendment No. 76 to Virgil C. Summer Nuclear Station Operating License  
 NPF-12 was transmitted to you by letter dated April 28, 1989. Due to a  
 reproduction error the Technical Specification (TS) pages were inadvertently  
 left out of the amendment. The TS pages are included with this letter. Please  
 insert them into your amendment.

Sincerely,

Original Signed By:  
 John J. Hayes, Jr., Project Manager  
 Project Directorate II-1  
 Division of Reactor Projects I/II

Enclosures:  
 Technical Specification pages

cc w/enclousre:  
 See next page

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[CORRECTION LETTER 62803]

OFC	:LA:PU21:DRPR:PM:PD21:DRPR:D:PB21:DRPR:		
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CONTAINMENT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

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these requirements, a determination shall be made as to the cause of the occurrence and the tendon(s) shall be restored to the required level of integrity.

If the lift-off force of the selected tendon lies below 90% of its Base Value, the tendon shall be completely detensioned and a determination made as to the cause of the occurrence.

- b. Determining that the average of the Normalized Lift Off Forces for each tendon group (vertical, dome and hoop) is greater than or equal to the minimum required average tendon force for the group. The minimum required average tendon force is 1160 kips for vertical tendons, 1063 kips for dome tendons, and 1000 kips for hoop tendons. The Normalized Lift Off Force for a tendon is obtained by adding the Normalizing Factor appearing in Table 4.6-2 to the lift off force. Failure to comply with this requirement may be evidence of abnormal degradation of the containment structure.

If the Normalized Lift-Off Force of any tendon is less than the applicable minimum required average tendon force, an investigation shall be conducted to determine the cause and extent of occurrence. This investigation shall include as a minimum the measurement of lift-off forces of tendons adjacent to the deficient tendon to determine if the average of the tendon lift-off forces in this region of the containment is equal to or greater than the minimum required average tendon force. Failure to comply with this requirement may be evidence of abnormal degradation of the containment structure.

- c. Detensioning one tendon in each group (dome, vertical and hoop) from the representative sample. One wire shall be removed from each detensioned tendon and examined to determine:
  - 1. That over the entire length of the tendon wire, the wire has not undergone corrosion, cracks or damage to the extent that an abnormal condition is indicated.
  - 2. A minimum tensile strength value of 240,000 psi (guaranteed ultimate strength of the tendon material) for at least three wire samples (one from each end and one at mid-length) cut from each removed wire.

- d. Determining for each tendon in the above representative tendon sample, that an analysis of a sample of the sheathing filler grease is within the following limits:

- 1. Grease Voids ≤ 5% of net duct volume
- 2. Chlorides ≤ 10 PPM
- 3. Sulphides ≤ 10 PPM
- 4. Nitrates ≤ 10 PPM
- 5. Water Content ≤ 10% by weight

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## CONTAINMENT SYSTEMS

### BASES

#### REACTOR BUILDING STRUCTURAL INTEGRITY (Continued)

In order for the tendon lift off force to be indicative of the level of prestress force in the containment, each measured force must be adjusted for the known differences which exist among the tendons due to original stressing force and elastic shortening loss. This adjustment is accomplished through the use of a Normalizing Factor ( $NF_i(t)$ ). This factor is added to the lift off force, which results in the Normalized Lift Off Force. The Normalizing Factor is given by:

$$NF_i(t) = \{F_{ave}(o) - F_i(o)\} \left\{1 - \frac{SR(t)}{100}\right\} + \Delta F_{es}^T \left\{\frac{N - 2n + 1}{2N}\right\}$$

$\{F_{ave}(o) - F_i(o)\}$  is the group average lock-off force at original stressing, minus the original stressing force for the specific tendon.

$SR(t)$  is stress relaxation (percent) which occurs at time  $t$  after original stressing.

$\Delta F_{es}^T$  is the total elastic shortening tendon force loss.

$n$  is the stressing sequence comprising the specific tendon.

$N$  is the total number of stressing sequences for the group of tendons which comprise the specific tendons.

$i$  refers to the specific tendon.

$t$  refers to the time after original stressing of the current inspection period.

The Base Values and Normalizing Factors of tendons selected for surveillances 4 through 10 are listed in Enclosure 8 of Attachment I to the Virgil C. Summer Nuclear Station Surveillance Test Procedure STP-160.001, "Containment Tendon Test," Revision 2. Based on experience from the first three tendon surveillances, STP-160.001 may have to be revised to add Base Values and Normalizing Factors for additional or alternate tendons not previously listed, but are required for a particular surveillance. The revision level of STP-160.001, as listed above, need not be updated in this Technical Specification where a change to Enclosure 8 of Attachment I only adds Base Values and Normalizing Factors for tendons not previously listed, but were used as additional or alternates for a particular surveillance. Base Values and Normalizing Factors listed in Enclosure 8 of Attachment I of STP-160.001 will not be revised prior to NRC approval.

The surveillance requirements for demonstrating the containment's structural integrity are in compliance with the recommendations of Proposed Revision 3 to Regulatory Guide 1.35, "Inservice Inspection of UngROUTED Tendons in Prestressed Concrete Containments," April 1979, except that in place of the Lower Limit and 90% Lower Limit defined by these Regulatory Guides, the 95% Base Value and 90% Base Value, respectively, are used.

Mr. O. S. Bradham  
South Carolina Electric & Gas Company

Virgil C. Summer Nuclear Station

cc:

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