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ELECTRIC ENGINEERING
DEPARTMENT

May 24, 1983

Director of Nuclear Reactor Regulation
Attention: Mr. D. H. Jaffe
Operating Reactors Branch #3
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: Calvert Cliffs Nuclear Power Plant
Units Nos. 1 & 2; Dockets Nos. 50-317 and 50-318
Containment Tendon Surveillance Technical
Specifications (T.S. 3/4.6.1.6)

Gentlemen:

A marked-up copy of our proposed technical specification 3/4.6.1.6 is attached per your request.

M. D. Patterson for
Malcolm D. Patterson
Engineer

MDP/pdv

CONTAINMENT SYSTEMS

CONTAINMENT STRUCTURAL INTEGRITY

LIMITING CONDITION FOR OPERATION

- 3.6.1.6 The structural integrity of the containment shall be maintained at a level consistent with the acceptance criteria in Specification 4.6.1.6.

APPLICABILITY: MODES 1, 2, 3, and 4

ACTION:

- With the containment structure exhibiting evidence of possible abnormal degradation per Specification 4.6.1.6.1, perform an engineering evaluation demonstrating the ability of the containment structure to continue to perform its design function. If continued containment integrity cannot be assured by engineering evaluation within 90 days of the surveillance test, be in COLD SHUTDOWN within 36 hours. *The requirements of Specification 3.0.4 are not applicable.*
- With the structural integrity of the containment not conforming at a level consistent with the acceptance criteria of Specification 4.6.1.6.2 or 4.6.1.6.3 restore structural integrity or complete an engineering evaluation that assures structural integrity prior to increasing Reactor Coolant System Temperature above 200°F.

SURVEILLANCE REQUIREMENTS

- 4.6.1.6.1 Containment Tendons. The containment tendon's structural integrity shall be demonstrated at the end of one, three, and five years following the initial containment structural integrity test and at five year intervals thereafter. The tendon's structural integrity shall be demonstrated by:

- Determining that for a representative sample of at least 21 tendons (6 dome, 5 vertical, and 10 hoop), each tendon has a normalized lift-off force equalling or exceeding its lower limit expected range for the time of the test (see Figures 4.6-1, -2, and -3). If the normalized lift-off force of any one tendon in a group lies between the lower limit expected range and the lower bound individual, an adjacent tendon on each side shall be checked for lift-off force. If both of these tendons are found acceptable, the surveillance program may proceed considering the single deficiency as unique and acceptable. If either of the adjacent tendons is found unacceptable, it shall be considered as evidence of possible abnormal degradation of the containment structure. ✓

If the normalized lift-off force of any single tendon lies below the lower bound individual, the occurrence should be considered as evidence of possible abnormal degradation of the containment structure.

In addition, more than one unacceptable tendon out of those selected for surveillance (from all three tendon groups) shall be considered as evidence of possible abnormal degradation of the containment structure.

In addition, determining that the average of the normalized lift-off forces for each sample population (hoop, vertical, dome) is equal to or greater than the required average prestress level; 536 kips for hoop tendons, 622 kips for vertical tendons, and 555 kips for dome tendons (reference Figures 4.6-1, -2, and -3). If the average is below the required average prestress force, it shall be considered as evidence of possible abnormal degradation of the containment structure.

- b. Detensioning one tendon in each group (a dome, a vertical, and a hoop tendon) from the sample population. Removing one wire from each detensioned tendon and:
 1. Determining the extent of corrosion, cracks, or other damage over the entire length of the wire. The presence of abnormal corrosion, cracks or other damage shall be considered evidence of possible abnormal degradation of the containment structure.
 2. A minimum tensile strength of 240 ksi for at least 3 wire samples (one from each end and one at mid length) cut from each removed wire. Failure of any one of the wire samples to meet the minimum tensile strength test shall be considered evidence of possible abnormal degradation of the containment structure.
- c. Taking sheath filler grease samples and checking for changes in its physical appearance.
- d. Unless there is evidence of possible abnormal degradation of the containment structure during the first three tests of tendons, the number of tendons checked for lift-off force during subsequent tests may be reduced to a representative sample of at least 9 tendons (3 dome, 3 vertical, 3 hoop).

4.6.1.6.2 End Anchorages and Adjacent Concrete Surfaces. The structural integrity of the end anchorages and adjacent concrete surfaces shall be demonstrated by determining through inspection that no apparent changes have occurred in the visual appearance of the end anchorage, concrete exterior surfaces or the concrete crack patterns adjacent to the end anchorages. Inspections of the concrete shall be performed during the Type A containment leakage rate tests (reference Specification 4.6.1.2) while the containment is at its maximum test pressure.

4.6.1.6.3 Liner Plate. The structural integrity of the containment liner plate shall be determined during the shutdown for each Type A containment leakage rate test (reference Specification 4.6.1.2) by a visual inspection of the plate and verifying no apparent changes in appearance or other abnormal degradation.

4.6.1.6.4 Reports. Any evidence of abnormal degradation of the containment structure detected during the above required tests and inspections shall be reported to the Commission pursuant to T.S. 6.9.1. This report shall include a description of the tendon condition, the condition of the concrete (especially at tendon anchorages), the inspection procedure, the tolerances on cracking, and the corrective actions taken.

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and performing a chemical analysis to detect changes in chemical properties. Any unusual changes in physical appearance or chemical properties that could adversely affect the ability of the filler grease to adhere to the tendon wires or otherwise inhibit corrosion shall be reported to the Commission pursuant to T.S. 6.9.1.