

Florida Power

CORPORATION
Crystal River Unit 3
Docket No. 80-002

October 23, 1995
3F1095-06

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D.C. 20555

Subject: Fifth Tendon Surveillance Exempted Tendons

References: A. FPC to NRC 3F1093-15 letter dated October 25, 1993
B. NRC to FPC 3N0795-11 letter dated July 28, 1995

Dear Sir:

Florida Power Corporation (FPC) is requesting concurrence to perform the surveillance of eight exempted tendons from the Fifth Tendon Surveillance with the Sixth Tendon Surveillance now scheduled for the Refuel 11 Outage in the Spring of 1998.

In the Fall of 1993, FPC performed the Fifth Tendon Surveillance while on-line. FPC made the commitment in Reference A to perform the inspection of eight tendons exempted in the Fifth Tendon Surveillance during the Sixth Tendon Surveillance then scheduled for Refuel 10 in the Spring of 1996. Those tendons, as explained in Reference A, were exempted to avert the personnel safety hazard involved with inspecting tendons in the steam vent area while the plant was on-line. Compensatory actions consisted of inspecting eight substitute tendons. These actions were consistent with the guidance given in Regulatory Guide 1.35, Revision 3, concerning tendon selection process. Combining the surveillance of the eight exempted tendons with the Sixth Tendon Surveillance was appropriate since a significant portion of the expenses of a tendon surveillance are incurred in bringing the contractor to the site. Those expenses consist of the vendor's contract and equipment setup.

The justifications for postponing the surveillance of the exempted tendons are:

- o The Crystal River Unit 3 (CR-3) Containment Tendon System has successfully passed all surveillances. CR-3 has also successfully passed all Containment Integrated Leakage tests (ILRTs). In addition, FPC will be performing a general inspection of the accessible interior and exterior surfaces of the containment structure during our Refueling 10 Outage scheduled for February 1996. The scope of the inspection will be the same as the visual inspection performed as part of an ILRT. These measures provide additional confidence that the integrity of the containment will be maintained in the two years between Refuel 10 and Refuel 11.

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- o Previous surveillances have included 35 tendons in the Steam Vent Exclusion Area. All tendons examined in this area have successfully passed their surveillance requirements.
- o Performance of the Sixth Tendon Surveillance is scheduled for Refuel 11 which is consistent with previous surveillance intervals (approximately five years). Attachment 1 presents a time-line figure of CR-3 tendon surveillances. Refueling 8 through 11 Outages are included in the figure to show that performing the surveillance in Refuel 11 Outage is within the five year frequency of the surveillance and allows more equal intervals between surveillances.

FPC understands the issues raised by the Staff in Reference B regarding grease leakage, corrosion of anchorheads and bearing plates, and spalling and cracking of concrete. However, as further explained in Attachment 2, during the Fifth Tendon Surveillance FPC found no evidence of corrosion-induced pitting of anchorheads or corrosion affecting tendon anchorage components. Nevertheless, during Refuel 10, FPC will perform a complete walkdown of the 549 tendons comprising the containment post-tensioning system. FPC will perform a visual inspection to monitor external corrosion, grease leakage, and monitor for spalling of concrete. Monitoring those areas of concern, and taking corrective actions where warranted, will provide an additional level of confidence in the continued integrity of the prestressed tendon system. This walkdown will also provide verification of tendon accessibility, thus facilitating the selection process for future surveillances.

FPC is proposing to conduct the surveillance of the eight exempted tendons in conjunction with the Sixth Tendon Surveillance. FPC's plan for the surveillance is to follow the requirements contained in CR-3 Technical Specification 5.6.2.7 which are factored in the Containment Tendon Surveillance Program. Emphasis will be added to the issues of grease leakage, pitting (potential corrosion) of anchor heads, corrosion of bearing plates and spalling and cracking of concrete.

FPC is providing in Attachment 2 information regarding the Steam Vent Exclusion Area for Tendons and also identification and location of the tendons that exhibited pitting at the anchorheads and corrosion of bearing plates during the Fifth Tendon Surveillance. This information was requested by the NRC staff during a recent telephone conference.

Sincerely,



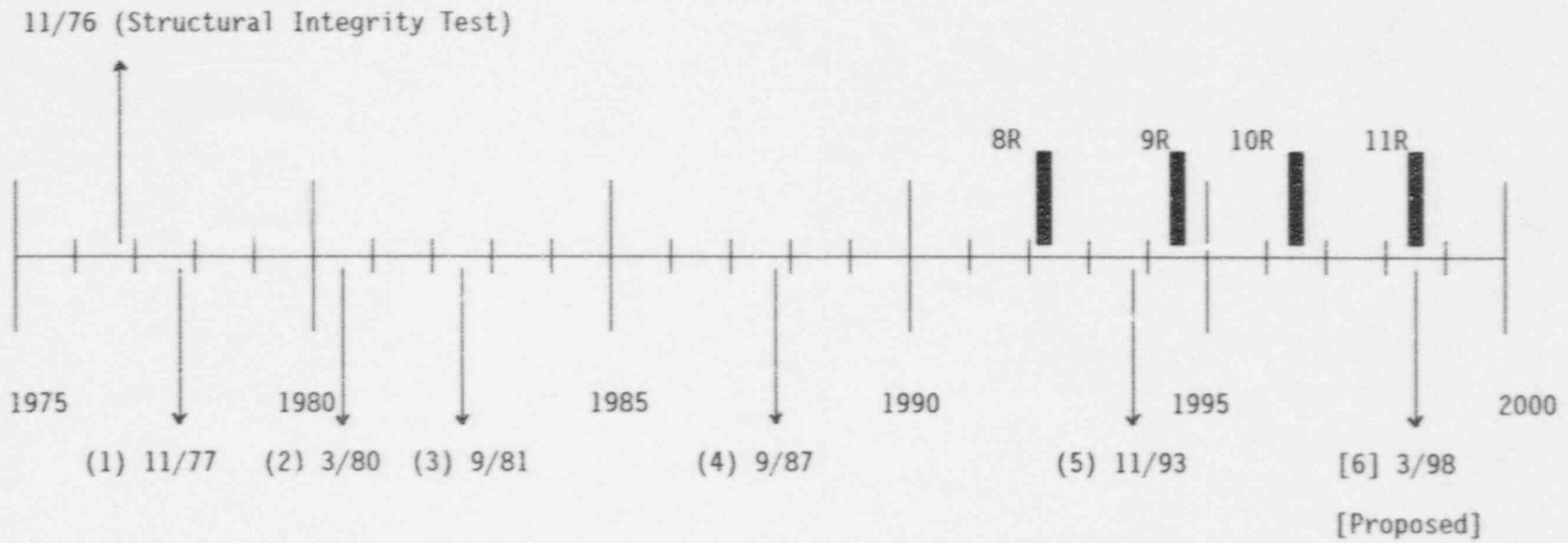
P. M. Beard, Jr.
Senior Vice President
Nuclear Operations

PMB/LVC

Attachments

xc: Regional Administrator, Region II
Senior Resident Inspector
NRR Project Manager

CR-3 TIME LINE



() Previous Tendon Surveillances

[] Proposed Surveillance

█ Refuel Outage

The attached sketch (page 3) depicts the Steam Vent Exclusion Zone with regard to tendon surveillances. The Reactor Building contains six (6) external buttresses spaced at sixty degree intervals. The exclusion zone encompasses buttresses #1, #2, and #3. Because of the potential for activation of the steam vents while on line, the following tendon groups are excluded from selection when performing an on-line surveillance:

- 1) Dome Tendons: Eighty five of the 123 dome tendons have at least one end (i.e., tendon cap) falling within the exclusion zone.
- 2) Hoop Tendons: These tendons each encompass three buttresses from end to end (i.e., three hoop tendons make up the circumference of the Reactor Building). There are six groups of hoop tendons: 1-3, 2-4, 3-5, 4-6, 5-1, and 6-2. Tendons above the roof line in the following groups would be excluded: 1-3, 2-4, 3-5, 5-1, and 6-2. This leaves only the 4-6 grouping as accessible while on line. One Hundred Forty (140) of the 282 total hoop tendons fall within the exclusion zone (i.e., are above the roof line and have at least one end on buttresses #1, #2, or #3). Hoop tendons below the roof line are not in the Steam Vent Exclusion Area.
- 3) Vertical Tendons: One third (i.e., 48) of the 144 vertical tendons fall within the exclusion zone.

Of the 549 total tendons, 273 (almost 50%) fall within the steam vent zone and can not be inspected while the plant is on-line.

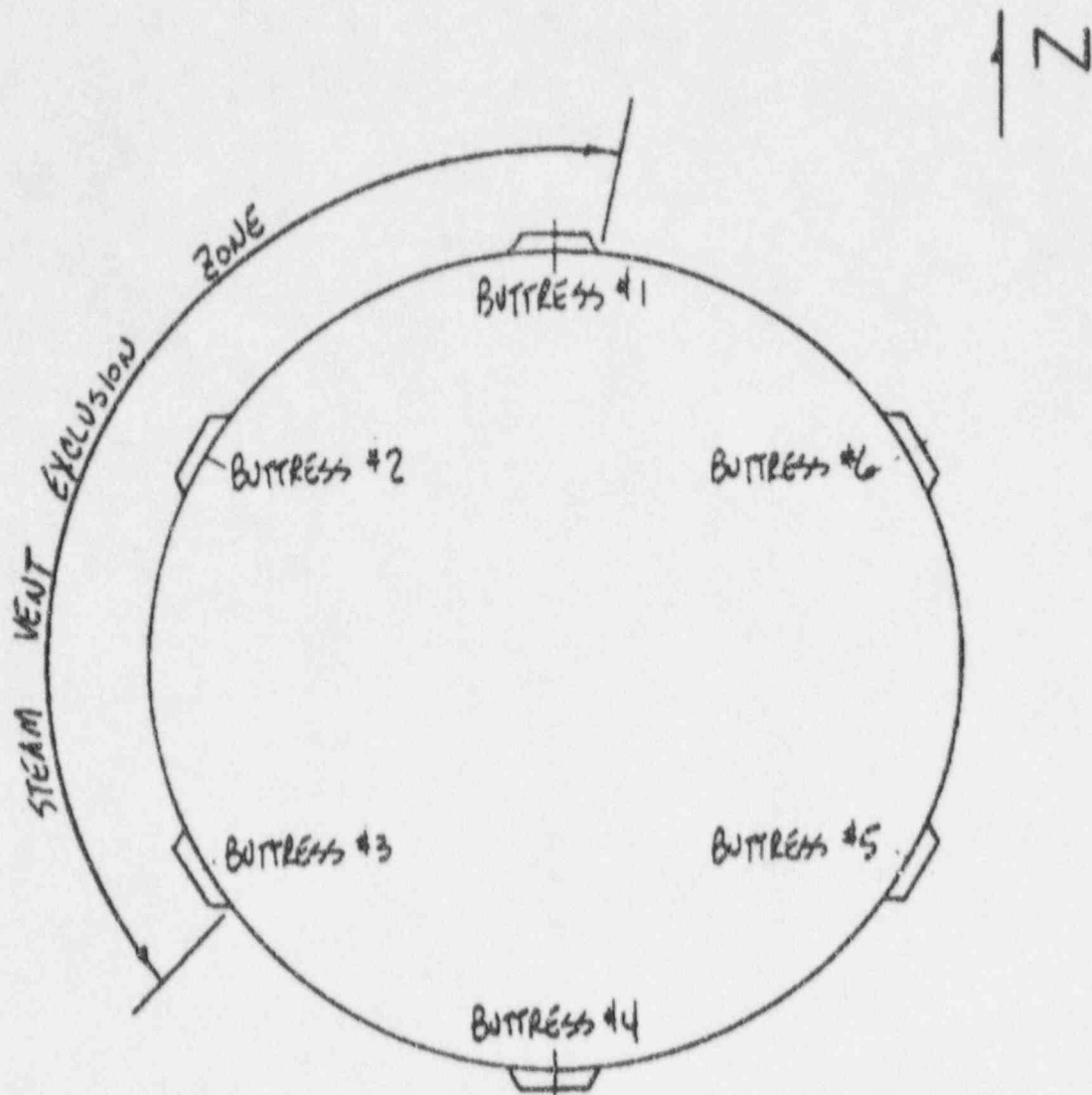
Identification of tendons exhibiting pitting at the anchorheads or corrosion of the bearing plates:

Five (5) tendons exhibited pitting at the anchorheads (stressing washer) during the Fifth Tendon Surveillance. However, since no signs of oxidation or buildup of crust or rust was observed, it was determined that the pitting was likely to be casting induced rather than corrosion induced. This conclusion was reached since no free moisture was observed within the sealed end caps of any tendon. Additionally, it was observed that the bulk filler grease covered all the tendon anchorheads except for the top end of tendon 56V15. Six (6) tendons exhibited corrosion at the bearing plate during the Fifth Tendon Surveillance. However, in all cases, the corrosion was external to the tendon cap (i.e., due to environmental conditions not due to insufficient grease coverage). In no case had the corrosion progressed to the point of allowing environmental conditions and moisture to affect tendon anchorage components. The following table identifies the tendons exhibiting pitting at the anchorheads, corrosion at the bearing plate or both.

Anchorhead Pitting	Bearing Plate Corrosion	Anchorhead Pitting & Bearing Plate Corrosion
35H1	46H47	46H21
42H1	D224	D231
	61V14	56V15

In response to the Staff's request as to the location of the tendons showing signs of pitting of anchorheads and/or corrosion of bearing plates, FPC offers the following:

- D231: Dome tendon running from just west of buttress #4 to just west of buttress #6.
- D224: Same as D231.
- 35H1: Hoop tendon running from buttress #3 to buttress #5 located inside building at 95' elevation (i.e. bottom tendon).
- 46H21: Hoop tendon running from buttress #4 to buttress #6 located outside building about mid-height.
- 46H47: Same as 46H21 however tendon is located near top of Reactor Building.
- 42H1: Hoop tendon running from buttress #4 to buttress #2 inside building at 95' elevation (i.e. bottom tendon).
- 56V15: Vertical tendon between buttresses #5 and #6.
- 61V14: Vertical tendon between buttresses #6 and #1.



PLAN VIEW : REACTOR BLDG.