FPL

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L-2000-072
10 CFR 50.90
10 CFR 50.91
10 CFR 50.92

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

Re: Turkey Point Units 3 and 4
Docket Nos. 50-250 and 50-251
Proposed License Amendments
Changes to Containment Structural Integrity
Technical Specifications

In accordance with 10 CFR 50.90, Florida Power and Light Company (FPL) requests that Appendix A of Facility Operating Licenses DPR-31 and DPR-41 be amended to modify the Turkey Point Units 3 and 4 Technical Specifications (TS). The proposed amendments incorporate the revisions to 10 CFR Section 50.55a(b)(2)(vi) which states that ASME Section XI, Subsection IWL, as modified and supplemented by the requirements in Section 50.55a(b)(2)(viii), shall be used by licensees when performing containment examinations.

FPL proposes to revise the following Turkey Point Units 3 and 4 Technical Specifications to incorporate the requirements specified in ASME Section XI, Subsection IWL, as modified and supplemented by the requirements in Section 50.55a(b)(2)(viii), Examination of concrete containments:

TS Section 3.6.1.6, "Limiting Condition for Operation," will be revised to conform to IWL tendon lift-off force requirements;

TS Sections 4.6.1.6.1, 4.6.1.6.2, and 4.6.1.6.3 will be revised to conform to containment tendon and containment surfaces inspection requirements specified in ASME Section XI, Subsection IWL, 1992 Edition with the 1992 Addenda, and 10 CFR 50.55a(b)(2)(viii).

The NRC Final Rule (61 FR 41303), dated August 8, 1996, requires implementation of the revised requirements for containment examination by September 9, 2001. FPL is planning to perform the containment tendon surveillance for Turkey Point Units 3 and 4 in March 2001. Therefore, FPL requests review and approval of the proposed license amendments by December 1, 2000.

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A description of the proposed license amendments is provided in Attachment 1. FPL has determined that the proposed license amendments do not involve a significant hazards consideration pursuant to 10 CFR 50.92. The no significant hazards consideration determination in support of the proposed Technical Specification changes is provided in Attachment 2.

Attachment 3 provides marked up pages for the proposed changes to the Technical Specifications.

The proposed license amendments have been reviewed by the Turkey Point Plant Nuclear Safety Committee and the FPL Company Nuclear Review Board.

In accordance with 10 CFR 50.91(b), a copy of the proposed license amendments is being forwarded to the State Designee for the State of Florida.

Should there be any questions, please contact us.

Very truly yours,

R. J. Hovey
Vice President
Turkey Point Plant

Attachments

cc: Regional Administrator, Region II, USNRC
Senior Resident Inspector, USNRC, Turkey Point Plant
Florida Department of Health

L-2000-072

Turkey Point Units 3 and 4
Docket Nos. 50-250 and 50-251
Proposed License Amendments
Changes to Containment Structural Integrity
Technical Specifications

STATE OF FLORIDA)
) ss.
COUNTY OF MIAMI-DADE)

R. J. Hovey being first duly sworn, deposes and says:

That he is Vice President, Turkey Point Plant, of Florida Power and Light Company, the Licensee herein;

That he has executed the foregoing document; that the statements made in this document are true and correct to the best of his knowledge, information and belief, and that he is authorized to execute the document on behalf of said Licensee.

R. J. Hovey

Subscribed and sworn to before me this
22nd day of May, 2000.

Cheryl A Stevenson
Name of Notary Public (Type or Print)

CHERYL A. STEVENSON
MY COMMISSION # CC 564017
EXPIRES: June 19, 2000
Bonded Thru Notary Public Underwriters

R. J. Hovey is personally known to me.

DESCRIPTION OF PROPOSED LICENSE AMENDMENTS

1.0 Introduction

In Federal Register 61 FR 41303, dated August 8, 1996, the NRC amended the Code of Federal Regulations 10 CFR 50.55a to incorporate by reference the 1992 Edition and Addenda of Subsection IWL of Section XI of the ASME Code. Subsection IWL specifies the requirements for inservice inspection (ISI) of Class CC (concrete containments) of light-water-cooled power plants. The amended rule became effective on September 9, 1996, and requires the licensees to incorporate the new requirements into their ISI program and to implement the first IWL containment inspection by September 9, 2001.

Since the amendment to 10 CFR 50.55a affects the Turkey Point Units 3 and 4 Technical Specifications (TS), Florida Power and Light Company (FPL) requests that Appendix A of Facility Operating Licenses DPR-31 and DPR-41 be amended to modify the Turkey Point Units 3 and 4 Technical Specifications for Containment Structural Integrity to reflect the requirements specified in ASME Section XI, Subsection IWL, 1992 Edition with the 1992 Addenda, and 10 CFR 50.55a(b)(2)(viii), Examination of concrete containments.

2.0 Proposed Technical Specification Changes

1. Changes to TS 3.6.1.6 - ACTION a:

The current ACTION a. reads:

"With more than one tendon (not including exempted* tendons) with an observed lift-off force between the predicted lower limit and 90% of the predicted lower limit or with one tendon below 90% of the predicted lower limit, restore the tendon(s) to the required level of integrity within 15 days……."

This section is revised to read:

"With more than one tendon with an observed lift-off force between 90% and 95% of the predicted force, or with one tendon below 90% of the predicted force, restore the tendon(s) to the required level of integrity within 15 days……"

Justification:

The reference to exempted tendons is deleted because IWL-2521.1(c) does not require lift-off test of exempted tendons. The change of lift-off force from "between the predicted lower limit and 90% of the predicted lower limit" to "between 90% and 95% of the predicted force" is to comply with IWL-3221.1(b)(1). The use of the words "predicted force" versus "predicted lower limit" is to comply with terminology consistent with IWL-3221.1.

2. **Changes to TS 3.6.1.6 - ACTION b:**

The current ACTION b. reads:

"With one exempted* tendon with an observed lift-off force at the accessible end below 86% of the predicted lower limit, restore the tendon to the required level of integrity within 15 days……."

This section is revised to read:

"With the average of all measured tendon forces for each type of tendon (dome, vertical, and hoop), including those measured in ACTION a., less than the predicted force, restore the tendon(s) to the required level of integrity within 15 days and perform an engineering evaluation of the containment and provide a Special Report to the Commission within 30 days in accordance with Specification 6.9.2 or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours."

Justification:

The current ACTION b. relates to lift-off force in exempted tendons. As indicated above, IWL-2521.1(c) does not require lift-off test of exempted tendons. Therefore, this section is not required. However, this ACTION statement is replaced with another tendon force requirement in IWL-3221.1(a).

As a result of the above changes, the footnote with asterisk at the bottom of Page 3/4 6-8 related to exempt tendon lift-off forces is no longer applicable.

3. **Changes to TS 3.6.1.6 - ACTION c:**

The current ACTION c. reads:

"With any abnormal degradation of the structural integrity other than ACTION a. at a level below the acceptance criteria of Specifications……"

This section is revised to read:

"With any abnormal degradation of the structural integrity other than ACTION a. and ACTION b. at a level below the acceptance criteria of Specifications....."

Justification:

The addition of "ACTION b." in this section is required since the new text of ACTION b. includes tendon force requirements.

4. **Changes to TS 4.6.1.6.1** - The current TS 4.6.1.6.1 addresses tendon inspection criteria (tendon selection, tendon lift-off tests, tendon detensioning/retensioning, tendon wire and sheathing filler inspection and lab tests, and determination of required tendon lift-off force).

This section is revised to read:

4.6.1.6.1 Containment Tendons. The containment tendons and the containment exterior surfaces shall be examined in accordance with ASME Boiler and Pressure Vessel Code, Section XI, Subsection IWL, "Requirements for Class CC Concrete Components of Light-Water Cooled Plants," and the modifications presented in 10 CFR 50.55a(b)(2)(viii), "Examination of concrete containments," as modified by approved exemptions. The containment structural integrity shall be demonstrated during the inspection periods specified in IWL-2410 and IWL-2420. The tendons' structural integrity shall be demonstrated by:

a. Determining that tendons, selected in accordance with IWL-2521, have the average of all measured tendon forces for each type of tendon (dome, vertical and hoop) equal to or greater than the minimum required prestress specified at the anchorage for that type of tendon.

b. Assuring that the measured force in each individual tendon is not less than 95% of the predicted force unless the following conditions are satisfied:

   1) The measured force in no tendon is below 90% of the predicted force and the measured force in no more than one tendon is between 90% and 95% of the predicted force;

2) The measured force in two tendons located adjacent to the tendon in 1) are not less than 95% of the predicted forces; and

3) The measured forces in all the remaining sample tendons are not less than 95% of the predicted force.

The predicted force for each tendon shall be calculated individually for each inspection prior to the beginning of each inspection, and should consider such factors as:

- Prestressing history;
- Friction losses; and
- Time-dependent losses (creep, shrinkage, relaxation), considering time elapsed from prestressing.

When evaluation of consecutive surveillances of prestressing forces for the same tendon or tendons in a group indicates a trend of prestress loss such that the tendon force(s) would be less than the minimum design prestress requirements before the next inspection interval, an evaluation shall be performed and reported in the Engineering Evaluation Report as prescribed in IWL-3300.

c. Performing tendon detensioning, examinations, and testing on a sample tendon of each type (dome, vertical, and hoop). A single wire or strand shall be removed from each detensioned tendon. Each removed wire or strand shall be examined over its entire length for corrosion and mechanical damage. Tension tests shall be performed on each removed wire or strand: one at each end, one at mid-length, and one in the location of the most corroded area, if any. The following information shall be obtained from each test:

1) Yield strength;
2) Ultimate tensile strength;
3) Elongation.

The condition of wire or strand is acceptable if:

1) Samples are free of physical damage;
2) Sample ultimate tensile strength and elongation are not less than minimum specified values.

d. Performing tendon retensioning of those tendons that have been detensioned to at least the force predicted for the tendon at the time of the test. However, the retensioning force shall not exceed 70% of the specified minimum ultimate tensile strength of the tendon based on the number of effective wires or strands in the tendon at the time of detensioning. During retensioning of these tendons, if the elongation corresponding to a specific load (adjusted for effective wires or strands) differs by more than 10% from that recorded during the last measurement, an evaluation must be performed to determine whether the difference is related to wire failures or slip of wires in anchorage. A difference of more than 10% must be identified in the ISI Summary Report required by IWA-6000.

e. Performing examination of corrosion protection medium and free water in accordance with IWL-2525, with acceptance standards prescribed in IWL-3221.4. The following conditions, if they occur, shall be reported in the ISI Summary Report required by IWA-6000:

1) The sheathing filler grease contains chemically combined water exceeding 10% by weight or the presence of free water;

2) The absolute difference between the amount removed and the amount replaced exceeds 10% of the tendon net duct volume.

3) Grease leakage is detected during general visual examination of the containment surface.

Justification:

This section is revised to conform to IWL and 10 CFR 50.55a(b)(2)(viii) requirements, except for the method for calculating tendon lift-off forces in Section 4.6.1.6.1.d. The method for calculating tendon lift-off forces does not change. It is relocated to Section 4.6.1.6.1.b.

5. **Changes to TS 4.6.1.6.2** - The current TS 4.6.1.6.2 addresses examinations of tendon end anchorages and adjacent concrete surfaces.

This section is revised to read:

4.6.1.6.2 End Anchorages and Containment Concrete Surfaces. The structural integrity of the end anchorages of all tendons inspected pursuant to Specification 4.6.1.6.1 and the containment concrete surfaces shall be demonstrated by performing examination of tendon anchorage areas and containment concrete surfaces in accordance with IWL-2000, with acceptance standards prescribed in IWL-3000. Acceptability of inaccessible areas shall be evaluated when conditions exist in accessible areas that could indicate the presence of or result in degradation to such inaccessible areas. For each inaccessible area identified, the following shall be provided in the ISI Summary Report required by IWA-6000:

1) A description of the type and estimated extent of degradation, and the conditions that led to the degradation;
2) An evaluation of each area, and the result of the evaluation; and
3) A description of necessary corrective actions.

Justification:

This section is revised to conform to IWL and 10 CFR 50.55a(b)(2)(viii) requirements.

6. **Changes to TS 4.6.1.6.3** - The heading of the current TS 4.6.1.6.3 reads: "Containment Surfaces."

It is changed to "Containment Surfaces Inspection for Containment Leakage Rate Testing Program."

Justification:

The change is made to differentiate from containment surface inspections under IWL (Section 4.6.1.6.2).

NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

Description of Proposed License Amendments

The purpose of the proposed license amendment is to revise the current requirements of the Technical Specifications related to containment examinations to comply with the 10 CFR 50.55a amendment. Specifically, 10 CFR 50.55a(b)(2)(vi) which requires that ASME Section XI, 1992 Edition with 1992 Addenda or 1995 Edition with 1996 Addenda, Subsection Subsection IWL, shall be used by licensees when performing containment examinations as modified and supplemented by the requirements in Sec. 50.55a(b)(2)(viii).

Introduction

The Nuclear Regulatory Commission has provided standards for determining whether a significant safety hazards consideration exists (10 CFR §50.92(c)). A proposed amendment to an operating license for a facility involves no significant hazards consideration, if operation of the facility in accordance with the proposed amendment would not (1) involve a significant increase in the probability or consequences of an accident previously evaluated; or (2) create the possibility of a new or different kind of accident from any accident previously evaluated; or (3) involve a significant reduction in a margin of safety. Each standard is discussed below for the proposed amendments.

Discussion

(1) Operation of the facility in accordance with the proposed amendments would not involve a significant increase in the probability or consequences of an accident previously evaluated.

Approval and implementation of this amendment will have no effect on the probability or consequences of accident previously evaluated. The containment is not an accident initiating system or structure; therefore, there will be no impact on any accident probabilities by the approval of this amendment. The containment examination requirements in the proposed amendments are identical, equivalent, or more rigorous than previous requirements. The containment serves an important function to mitigate consequences of postulated accidents evaluated and the examinations proposed in this amendment will not result in a reduction in the capability of the containment to meet its intended design function. Additionally, the proposed changes to the Technical Specifications reflect the adoption of ASME Section XI Subsection IWL containment inservice inspections required by 10 CFR 55a(b)(2).

Based on the above, it is concluded that the proposed amendments do not involve a significant increase in the probability or consequences of any accident previously evaluated.

(2) Operation of the facility in accordance with the proposed amendments would not create the possibility of a new or different kind of accident from any previously evaluated.

The proposed changes do not alter the design, physical configuration, or modes of operation of the plant. No changes are being made to the plant that would introduce any new accident causal mechanisms. The proposed Technical Specification changes do not impact any plant systems that are accident initiators, since the containment functions primarily as an accident mitigator and the functional requirements of the containment structure are not changed. No new accident causal mechanisms are created as a result of NRC approval of the proposed amendments request. Therefore, the proposed changes do not create the possibility of a new or different kind of accident from any previously evaluated.

(3) Operation of the facility in accordance with the proposed amendments would not involve a significant reduction in a margin of safety.

Margin of safety is related to the confidence in the ability of the fission product barriers to perform their design functions during and following an accident situation, including the performance of the containment. The containment is capable of performing as intended, and its function is verified by visual examination, post-tensioning system examinations, and leakage rate testing. The containment examination requirements in the proposed amendments are identical, equivalent, or more rigorous than previous requirements. As such, the ability of the containment to perform its design function will not be impaired by the implementation of the proposed amendments request. Therefore, operation of the facility in accordance with the proposed amendments would not involve a significant reduction in a margin of safety.

Summary

Based on the discussion presented above, FPL has concluded that the proposed license amendments do not involve a significant safety hazards consideration.

Environmental Consideration

10 CFR 51.22(c)(9) provides criteria for identification of licensing and regulatory actions eligible for categorical exclusion from performing an environmental assessment. A proposed amendment to an operating license for a facility requires no environmental assessment if operation of the facility in accordance with the proposed amendment would not:

(i) involve a significant hazards consideration,

(ii) result in a significant change in the types or significant increase in the amounts of any effluents that may be released offsite, and

(iii) result in a significant increase in individual or cumulative occupational radiation exposure.

The proposed license amendments revise the Turkey Point Units 3 and 4 Technical Specifications to comply with the revised requirements related to containment examinations as specified by 10 CFR 50.55a amended in August 8, 1996. The containment examination requirements in the proposed amendments are either identical or more rigorous than the previous requirements. The proposed amendments will have no effect on the probability or consequences of accidents previously evaluated. In addition, the proposed amendments do not create the possibility of a new or different kind of accident. Therefore, the proposed license amendments involve no significant increase in the amounts and no significant change in the types of any effluents that may be released offsite, and no significant increase in individual or cumulative occupational radiation exposure.

FPL has reviewed these proposed license amendments and concluded that the proposed amendments involve no significant hazards consideration and meet the criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), an environmental impact statement or environmental assessment is not required in connection with issuance of the amendments.

ATTACHMENT 3

PROPOSED TECHNICAL SPECIFICATION PAGES

3/4 6-8
3/4 6-9
3/4 6-10

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:

a. With more than one tendon ~~(not including exempted* tendons)~~ with an observed lift-off force between ~~the predicted lower limit and 90% of the predicted lower limit~~ or with one tendon below 90% of the predicted ~~lower limit~~, restore the tendon(s) to the required level of integrity within 15 days and perform an engineering evaluation of the containment and provide a Special Report to the Commission within 30 days in accordance with Specification 6.9.2 or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. ~~With one exempted* tendon with an observed lift-off force at the accessible end below 86% of the predicted lower limit, restore the tendon to the required level of integrity within 15 days and perform an engineering evaluation of the containment and provide a Special Report to the Commission within 30 days in accordance with Specification 6.9.2 or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.~~

c. With any abnormal degradation of the structural integrity other than ACTION a., at a level below the acceptance criteria of Specifications 4.6.1.6.1, 4.6.1.6.2 and 4.6.1.6.3, restore the containment to the required level of integrity within 72 hours and perform an engineering evaluation of the containment and provide a Special Report to the Commission within 15 days in accordance with Specification 6.9.2 or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

~~4.6.1.6.1 Containment Tendons. The containment tendons' structural integrity shall be demonstrated every fifth year from the date of the initial structural integrity test. The tendons' structural integrity shall be demonstrated by:~~

~~*Exempted in accordance with IWL-2521.1(a). Lift-off forces observed at the accessible end below 90% of the predicted lower limit shall be reported to the Commission for information only.~~

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SURVEILLANCE REQUIREMENTS (Continued)

a. Determining that a random but representative sample** of at least 12 tendons (3 dome, 4 vertical, and 5 hoop) each have an observed lift-off force within predicted limits for each. For each subsequent inspection one tendon from each group may be kept unchanged to develop a history and to correlate the observed data. If the observed lift-off force of any one tendon (not including exempted* tendons) in the original sample population lies between the predicted lower limit and 90% of the predicted lower limit, two tendons, one on each side of this tendon should be checked for their lift-off forces. If both of these adjacent tendons are found to be within their predicted limits, all three tendons should be restored to the required level of integrity. This single deficiency may be considered unique and acceptable.

b. Performing tendon detensioning, inspections, and material tests on a previously stressed tendon from each group (dome, vertical, and hoop). A randomly selected tendon from each group shall be completely detensioned in order to identify broken or damaged wires and determining that over the entire length of the removed wire or strand that:

1) The tendon wires or strands are free of corrosion, cracks, and damage,

2) There are no changes in the presence or physical appearance of the sheathing filler-grease, and

3) A minimum tensile strength of 240,000 psi (guaranteed ultimate strength of the tendon material) for at least three wire or strand samples (one from each end and one at mid-length) cut from each removed wire or strand. Failure of any one of the wire or strand samples to meet the minimum tensile strength test is evidence of abnormal degradation of the containment structure.

c. Performing tendon retensioning of those tendons detensioned for inspection to their observed lift-off force with a tolerance limit of +6, -0%. During retensioning of these tendons, the changes in load and elongation should be measured simultaneously at a minimum of three approximately equally spaced levels of force between zero and the seating force. If the elongation corresponding to a specific load differs by more than 5% from that recorded during installation, an investigation should be made to ensure that the difference is not related to wire failures or slip of wires in anchorages;

*Exempted in accordance with IWL-2521.1(a). Lift-off forces observed at the accessible end below 90% of the predicted lower limit shall be reported to the Commission for information only.

**After the process of randomly selecting tendons is performed, inaccessible tendons may be exempted in accordance with IWL-2521.1(a). Substitute tendons shall be selected that are located as close as possible to the exempted tendons. The accessible end of exempted tendons shall have the lift-off force measured.

Insert B

SURVEILLANCE REQUIREMENTS (Continued)

d. Assuring that the observed lift-off force for each tendon exceeds the minimum required lift-off force. Required lift-off forces shall be calculated individually for each surveillance tendon prior to the beginning of each surveillance, and should consider such factors as:

1) Prestressing history;
2) Friction losses; and
3) Time-dependent losses (creep, shrinkage, relaxation), considering time elapsed from prestressing.

e. Verifying the OPERABILITY of the sheathing filler grease by:

1) Minimum grease coverage exists for the different parts of the anchorage system, and

2) The chemical properties of the filler material are within the tolerance limits as specified by the manufacturer.

4.6.1.6.2 End Anchorages and Adjacent Concrete Surfaces. The structural integrity of the end anchorages of all tendons inspected pursuant to Specification 4.6.1.6.1 and the adjacent concrete surfaces shall be demonstrated by determining through visual inspection that no unacceptable levels of corrosion exist on the end anchorages and no unacceptable cracking exists in the concrete adjacent to the end anchorages. Determination of acceptance levels shall be by engineering evaluation of the areas in question. If unacceptable conditions are found, the tendons inspected during the previous surveillance shall be examined to determine whether the corrosion levels or concrete cracking have increased since the previous surveillance. Inspection of adjacent concrete surfaces shall be performed concurrently with the containment tendon surveillance (Technical Specification 4.6.1.6.1).

for Containment Leakage Rate Testing Program

4.6.1.6.3 Containment Surfaces. In accordance with the Containment Leakage Rate Testing Program, a visual inspection of the accessible interior and exterior surfaces of the containment, including the liner plate, shall be performed. The purpose of this inspection shall be to identify any evidence of structural deterioration which may affect containment structural integrity or leaktightness. The visual inspection shall be general in nature; its intent shall be to detect gross areas of widespread cracking, spalling, gouging, rust, weld degradation, or grease leakage. The visual examination may include the utilization of binoculars or other optical devices. Corrective actions taken, and recording of structural deterioration and corrective actions, shall be in accordance with the Containment Leakage Rate Testing Program. Records of previous inspections shall be reviewed to verify no apparent changes in appearance. The first inspection performed will form the baseline for future surveillances.

INSERT A

b. With the average of all measured tendon forces for each type of tendon (dome, vertical, and hoop), including those measured in ACTION a., less than the predicted force, restore the tendon(s) to the required level of integrity within 15 days and perform an engineering evaluation of the containment and provide a Special Report to the Commission within 30 days in accordance with Specification 6.9.2 or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

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4.6.1.6.1 Containment Tendons. The containment tendons and the containment exterior surfaces shall be examined in accordance with ASME Boiler and Pressure Vessel Code, Section XI, Subsection IWL, "Requirements for Class CC Concrete Components of Light-Water Cooled Plants," and the modifications presented in 10 CFR 50.55a(b)(2)(viii), "Examination of concrete containments." The containment structural integrity shall be demonstrated during the inspection periods specified in IWL-2410 and IWL-2420. The tendons' structural integrity shall be demonstrated by:

a. Determining that tendons, selected in accordance with IWL-2521, have the average of all measured tendon forces for each type of tendon (dome, vertical and hoop) equal to or greater than the minimum required prestress specified at the anchorage for that type of tendon.

b. Assuring that the measured force in each individual tendon is not less than 95% of the predicted force unless the following conditions are satisfied:

   1) The measured force in no tendon is below 90% of the predicted force and the measured force in no more than one tendon is between 90% and 95% of the predicted force;
   2) The measured force in two tendons located adjacent to the tendon in 1) are not less than 95% of the predicted forces; and
   3) The measured forces in all the remaining sample tendons are not less than 95% of the predicted force.

   The predicted force for each tendon shall be calculated individually for each inspection prior to the beginning of each inspection, and should consider such factors as:

INSERT B (Continued)

- Prestressing history;
- Friction losses; and
- Time-dependent losses (creep, shrinkage, relaxation), considering time elapsed from prestressing.

When evaluation of consecutive surveillances of prestressing forces for the same tendon or tendons in a group indicates a trend of prestress loss such that the tendon force(s) would be less than the minimum design prestress requirements before the next inspection interval, an evaluation shall be performed and reported in the Engineering Evaluation Report as prescribed in IWL-3300.

c. Performing tendon detensioning, examinations, and testing on a sample tendon of each type (dome, vertical, and hoop). A single wire or strand shall be removed from each detensioned tendon. Each removed wire or strand shall be examined over its entire length for corrosion and mechanical damage. Tension tests shall be performed on each removed wire or strand: one at each end, one at mid-length, and one in the location of the most corroded area, if any. The following information shall be obtained from each test:

1) Yield strength;
2) Ultimate tensile strength;
3) Elongation.

The condition of wire or strand is acceptable if:

1) Samples are free of physical damage;
2) Sample ultimate tensile strength and elongation are not less than minimum specified values.

d. Performing tendon retensioning of those tendons that have been detensioned to at least the force predicted for the tendon at the time of the test. However, the retensioning force shall not exceed 70% of the specified minimum ultimate tensile strength of the tendon based on the number of effective wires or strands in the tendon at the time of retensioning. During retensioning of these tendons, if the elongation corresponding to a specific load (adjusted for effective wires or strands) differs by more than 10% from that recorded during the last measurement, an evaluation must be performed to determine whether the difference is related to wire failures or slip of wires in anchorage. A difference of more than 10% must be identified in the ISI Summary Report required by IWA-6000.

INSERT B (Continued)

e. Performing examination of corrosion protection medium and free water in accordance with IWL-2525, with acceptance standards prescribed in IWL-3221.4. The following conditions, if they occur, shall be reported in the ISI Summary Report required by IWA-6000:

1) The sheathing filler grease contains chemically combined water exceeding 10% by weight or the presence of free water;
2) The absolute difference between the amount removed and the amount replaced exceeds 10% of the tendon net duct volume.
3) Grease leakage is detected during general visual examination of the containment surface.

4.6.1.6.2 End Anchorages and Containment Concrete Surfaces. The structural integrity of the end anchorages of all tendons inspected pursuant to Specification 4.6.1.6.1 and the containment concrete surfaces shall be demonstrated by performing examination of tendon anchorage areas and containment concrete surfaces in accordance with IWL-2000, with acceptance standards prescribed in IWL-3000. Acceptability of inaccessible areas shall be evaluated when conditions exist in accessible areas that could indicate the presence of or result in degradation to such inaccessible areas. For each inaccessible area identified, the following shall be provided in the ISI Summary Report required by IWA-6000:

1) A description of the type and estimated extent of degradation, and the conditions that led to the degradation;
2) An evaluation of each area, and the result of the evaluation; and
3) A description of necessary corrective actions.