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TO: V Stello

FROM: Florida Power & LightCo
Miami, Fla
R E Uhrig

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ENCLOSURE

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License # DPR 31 & 41 Amend: Proposed change to tech specs consisting of revisions concerning tendon inspections.....
notarized 9-29-77.....

8p

PLANT NAME: Turkey Point 3 & 4

11-4-77 .ehf

40 ENCL.

SAFETY

FOR ACTION/INFORMATION

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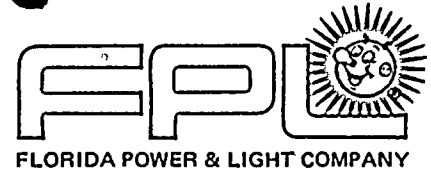
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September 29, 1977
L-77-306

Office of Nuclear Reactor Regulation
Attn: Mr. Victor Stello, Director
Division of Operating Reactors
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Stello:

Re: Turkey Point Unit Nos. 3 & 4
Docket Nos. 50-250 and 50-251
Proposed Amendment to Facility
Operating Licenses DPR-31 and DPR-41

In accordance with 10 CFR 50.30, Florida Power & Light Company submits herewith three (3) signed originals and forty (40) copies of a request to amend Appendix A of Facility Operating License.

The proposed amendment is described below and shown on the accompanying Technical Specification page bearing the date of this letter in the lower right hand corner.

Page 4.4-4

Specification 4.4.6 is revised to require inspection of Unit 3 horizontal tendon 64H51 and dome tendon 1D53 instead of 64H50 and 1D27 respectively. Additionally, Specification 4.4.6 is revised to require inspection of Unit 4 horizontal tendons 62H38 and 42H80 and dome tendon 2D3 instead of 13H38, 42H57 and 2D14 respectively.

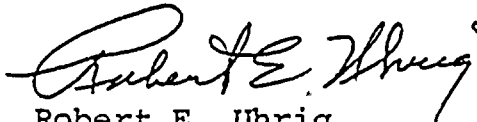
The proposed amendment has been reviewed by the Turkey Point Plant Nuclear Safety Committee and the Florida Power & Light Company Nuclear Review Board. They have concluded that it does not involve an unreviewed safety question. A written safety evaluation is attached.

Office of Nuclear Reactor Regulation
Attn: Mr. Victor Stello, Director
Division of Operating Reactors

Page 2

So that we may avoid non-compliance with our Technical Specifications, we request that your review of this change be completed by October 4, 1977.

Very truly yours,



Robert E. Uhrig
Vice President

REU/WAK:ltm
Attachments

cc: J. P. O'Reilly, Region II
Robert Lowenstein, Esq.

4.4.6 TENDON SURVEILLANCE

Lift-off

Lift-off readings will be taken for the following nine (9) tendons available for inspection:

Unit 3

Horizontal 62E13, 42E70, 64H51

Vertical 23V1, 45V7, 61V1

Dome 1D53, 2D28, 3D28

Unit 4

62H38, 42H80, 64E70

12V29, 34V29, 56V29

1D28, 2D3, 3D28

Wire Inspection

One horizontal, one vertical and one dome tendon will be relaxed and one wire will be removed from each as a sample. (At subsequent inspections different tendons will be used for the sample). Wires will be visually inspected for corrosion and pitting. Tensile tests will be performed on three (3) samples cut from each wire (one from each end and one from the middle) of a length equal to the maximum length acceptable for the test apparatus to be used.

After samples are taken, tendons will be re-tensioned and final lift-off readings will be taken.

Test Frequency

Lift-off readings and wire inspection will take place at the end of the first, third and every fifth year thereafter from the date of the structural integrity test. Tendon surveillance may be conducted during reactor operation.

SAFETY EVALUATION

Re: Turkey Point Unit Nos. 3 & 4
Docket Nos. 50-250 & 50-251
Tendon Surveillance

Introduction

This evaluation supports a proposed change to Technical Specification 4.4.6 (Tendon Surveillance). The list of Unit 3 tendons is revised to delete tendons 64H50 & 1D27, and add 64H51 & 1D53. The list of Unit 4 tendons is revised to delete tendons 13H38, 42H57 & 2D14, and add 62H38, 42H80 & 2D3.

Discussion

General Design Criterion 53, "Provisions for Containment Testing and Inspection" of Appendix A to 10 CFR, Part 50 requires, in part, that the reactor containment be designed to permit (1) periodic inspection of all important areas, and (2) an appropriate surveillance program. The containment design of Turkey Point Units 3 and 4 provides a pre-stressed concrete structure with ungrouted tendons. An inservice inspection program for surveillance of these tendons was established and is specified in Section 4.4.6 of Appendix A to License Nos. DPR-31 and DPR-41.

Surveillance tendons were chosen such that a sample was obtained from each major tendon type (dome, vertical and hoop). The specific choices within each type were selected to provide tendons subject to various environmental exposures. Technical Specification 4.4.6 describes the specific items to be covered on each surveillance tendon. Due to the problems described below, it has been determined that substitute tendons should be selected. The surveillance using the substitute tendons will be performed in the same manner, using the same equipment, as proposed for the original tendons.

Unit 3:

During the first year (1972) and third year (1974) surveillance of Unit 3, tendons 64H51 and 1D27 were inspected. Tendon 64H51 was identified, examined and reported as tendon 64H50. Tendon 64H50 has not been inspected and remains in its original installed condition. Since no wires have been removed from tendon 64H50, we plan to leave it intact and continue inspecting tendon 64H51 during future surveillances.

Inspection of dome tendon 1D27 requires that personnel work in the area of the main steam relief and atmospheric dump valve discharges and would thus expose the workmen to an unnecessary hazard should a safety valve or atmospheric steam relief open. Therefore, we plan to inspect tendon 1D53 during future surveillances.

Unit 4:

During the third year (1975) surveillance of Unit 4, the three pre-selected horizontal tendons 13H15, 51H50 and 35H70 which comprise a complete hoop were not inspected due to the unnecessary personnel exposure to steam relief and atmospheric dump valve discharges as described above. Tendons 13H38, 42H57 and 64H70 were selected and inspected as approved by Amendment No. 11 to Facility Operating License DPR-41. Review of the surveillance tendons shows that further improvement is necessary to diminish the potential personal hazard associated with the surveillance of tendon 42H57. Therefore, tendon 42H80 has been chosen for future surveillance. Also, tendon 62H38 will be inspected in lieu of 31H38 during future surveillances. The resulting three horizontal tendons to be surveilled (13H38, 42H80 and 62H38) will provide a more representative sampling of the various environmental exposures and will comprise a complete hoop. To provide additional surveillance information, and to further mitigate the personal hazard (similar to that described for tendon 42H57) associated with surveilling tendon 2D14, dome tendon 2D3 will be utilized.

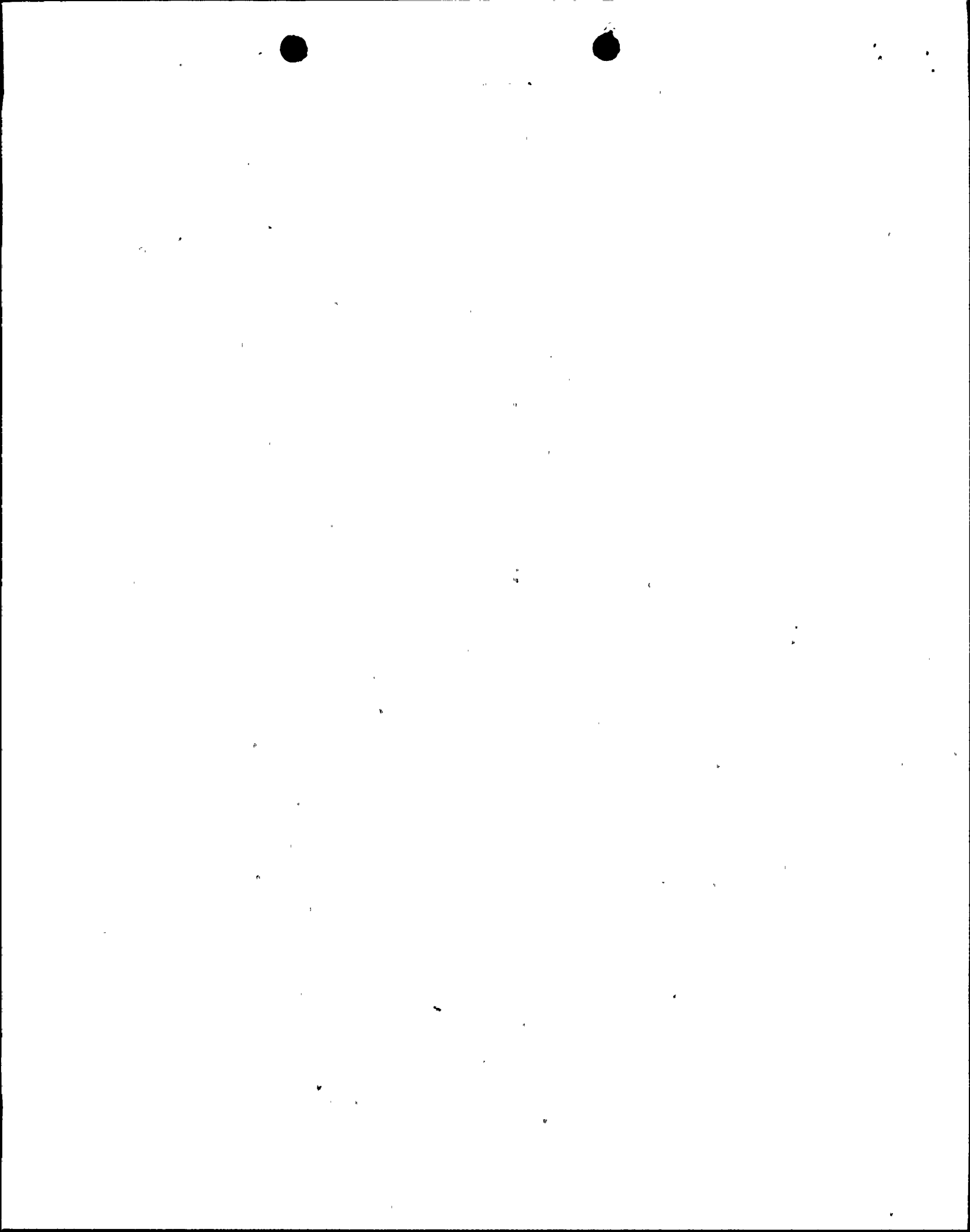
Evaluation

FSAR, page 5.1.2-6 states that any 3 adjacent tendons in any group (dome, vertical or hoop) can be lost without affecting the structure's integrity. FSAR, Section 5.1.7.4, (pg. 5.1.7-6) states that the surveillance tendons (9 in total number) are in excess of design requirements. Also, both FSAR, Section 5.1.7.4 and Technical Specification 4.4.6 requires that the surveillance tendons be retensioned to the stress level measured in the tendon at the lift-off reading. Furthermore, FSAR, (Section 5.1.4.4), references ACI 318-63, paragraph 2621(d), which states that "the total loss of prestress due to unreplaced broken tendons shall not exceed 2 percent of the total prestress." The loss of only two wires (out of a total of 90) does not change the capability of the tendon to perform its function. (Reference previous Units 3 and 4 Tendon Surveillance Reports.) Thus the surveillance tendons are still available to perform the tendon design function.

Figures 1 and 2 show the original and proposed surveillance tendons. An examination of these figures shows that the proposed surveillance tendons will experience a full environmental exposure.

Unit 3:

Tendons 64H50 and 64H51 are both located between azimuths 226° and 346° . Tendon 64H50 is at elevation 96'-10" and tendon 64H51 is at elevation 98'-6". Since both tendons are located between the same azimuths at approximately the same elevation, they experience essentially the same environmental conditions.



Two wires have been removed from tendon 64H51, but no wires have been removed from 64H50. Since both tendons are in approximately the same location, wire samples from either one would satisfy the intent of Specification 4.4.6. There are no structural safety related consequences associated with having tested tendon 64H51 instead of 64H50.

Since three 120-degree tendons comprising one complete hoop system were inspected (including lift-off readings) during the first year and third year surveillances, the inservice tendon inspection program has met FSAR commitments. Substitution of tendon 64H51 for 64H50 has not compromised the inservice tendon inspection program.

Tendons 1D27 and 1D53 are from the same dome group, have their ends anchored at approximately the same elevations within the same 60-degree angles, and experience essentially the same environmental conditions. Since the influences on both tendons are approximately equal, wire samples from either one would satisfy the intent of Technical Specification 4.4.6. Two wires have been removed from tendon 1D27, but as discussed above, there are no structural safety related consequences associated with terminating the surveillance of 1D27 and instead surveilling 1D53. Thus, substituting tendon 1D53 for 1D27 will meet FSAR commitments and will not compromise the inservice tendon inspection program.

Unit 4:

Tendon 42H80 and 42H57 are both located between azimuths 314° and 74°. Tendon 42H80 is located at elevation 145'-8 3/4" and tendon 42H57 is located at elevation 107'-4 3/4". Although the change in elevation is notable, it is felt to be insignificant with regard to environmental exposure and is necessary to protect the personnel performing the surveillance. There have been no wires removed from 42H57. Thus, the substitution of tendon 42H80 in lieu of 42H57 will continue to meet FSAR commitments and will not compromise the inservice inspection program.

Tendon 62H38 is located between azimuths 74° and 194° at elevation 76'-3 5/8". Tendon 13H38 is located between azimuths 14° and 134° at elevation 76'-10". The tendons are at approximately the same elevation, however, the butress anchorage locations are shifted 60-degrees and might thus experience slightly different environmental exposure. Nevertheless, the change is deemed beneficial in that the new group of horizontal tendons will comprise one complete hoop and will thus provide more representative information during future surveillances. Two wires have been removed from tendon 13H38, but as discussed above, there are no structural safety related consequences associated with terminating the surveillance of 13H38 and instead surveilling 62H38.

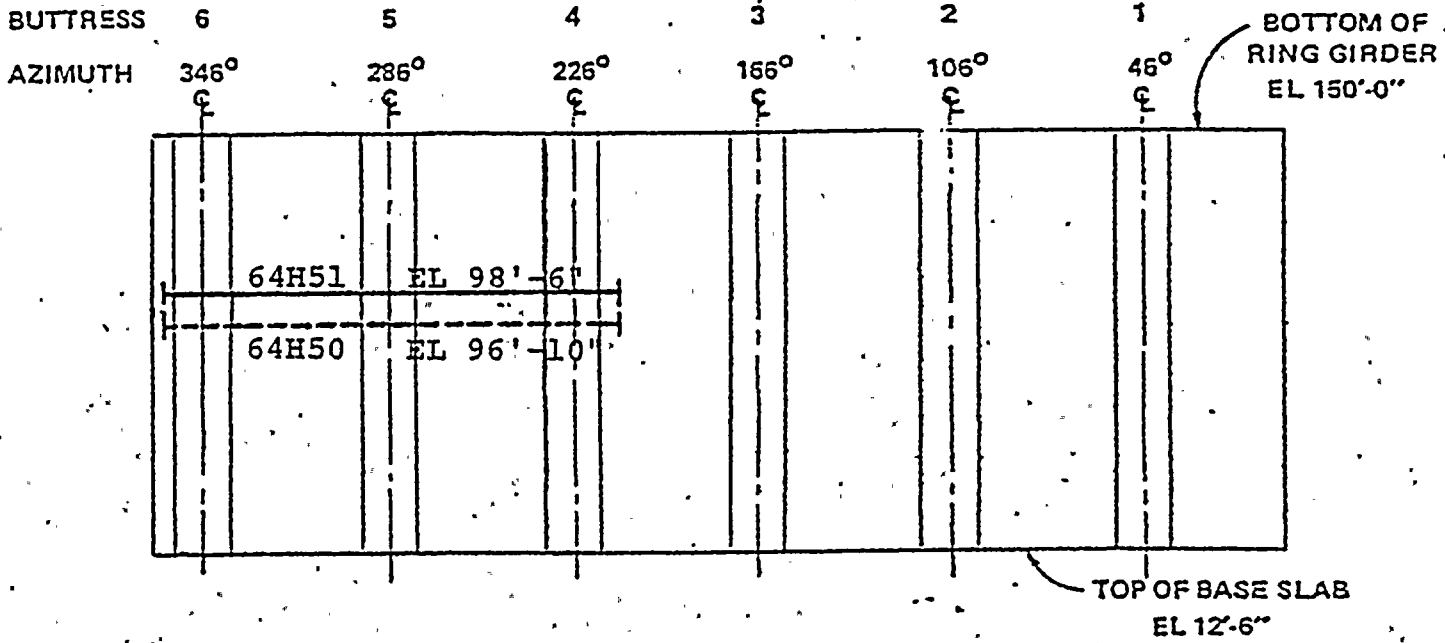
Tendons 2D3 and 2D14 are from the same dome group, have their ends anchored at approximately the same elevations within the same 60-degree angles, and experience essentially the same environmental

conditions. Since the influences on both tendons are approximately equal, wire samples from either one would satisfy the intent of Technical Specification 4.4.6. There have been no wires removed from 2D14. Thus, substituting tendon 2D3 for 2D14 will meet the FSAR commitments and will not compromise the inservice tendon inspection program.

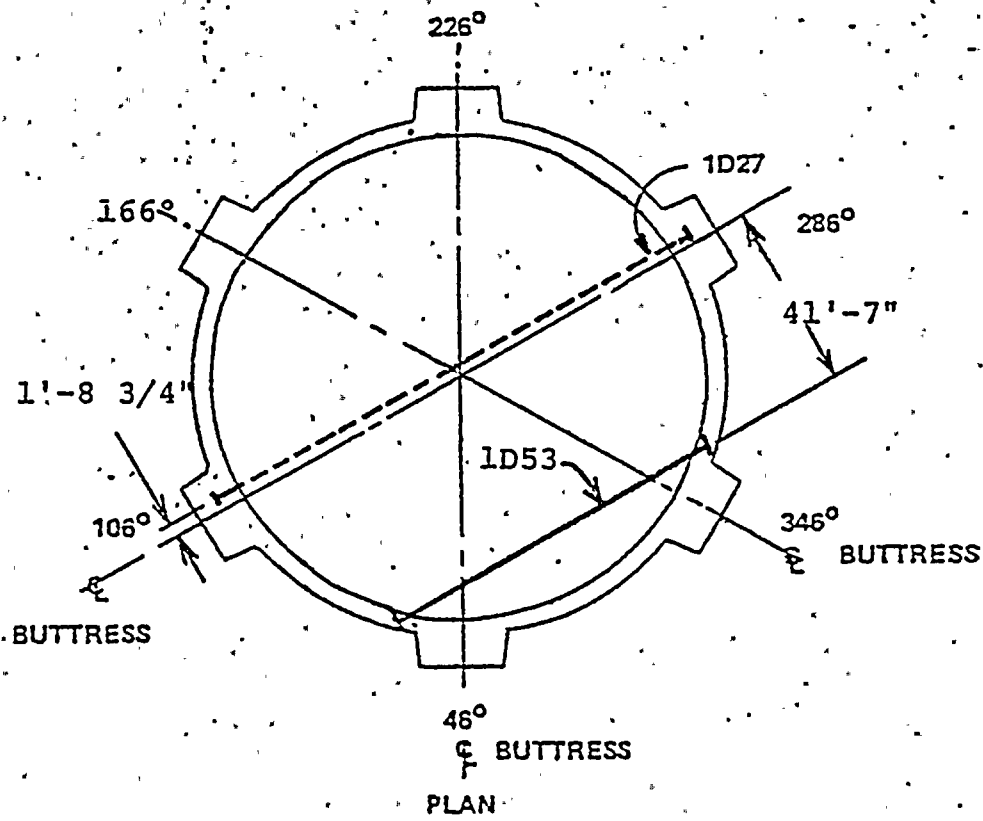
The proposed substitute surveillance tendons (1) adequately determine the effects of corrosion on the containment structure tendons and (2) satisfy the intent of Regulatory Guide 1.35, "Inservice Inspection of Ungrouted Tendons in Prestressed Concrete Containment Structures." This conclusion is based in part on the Turkey Point Technical Specification requirement that complete tendon surveillance tests be performed on both Units 3 and 4. The requirement that complete tendon surveillance tests be performed for both units is in excess of the requirements of Regulatory Guide 1.35. Regulatory Guide 1.35 allows visual inspection of the second of two units located on the same site if both units were constructed by the same contractor in the same manner at approximately the same time. The performance of tensile tests and tendon lift-off readings on both units, rather than on just one unit, increases the probability that any variation in tendon performance will be observed. The wires removed from each tendon group in the containments do not decrease the total prestress below the acceptance level specified in ACI 318-63, paragraph 2621(d) and the FSAR commitments are still valid. We, therefore, conclude that the tendon surveillance test program is not diminished in effectiveness by the proposed changes.

Conclusions

Based on these considerations, (1) the proposed change does not increase the probability or consequences of accidents or malfunctions of equipment important to safety and does not reduce the margin of safety as defined in the basis for any technical specification, therefore, the change does not involve a significant hazards consideration, (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (3) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.



DEVELOPED EXTERIOR ELEVATION
HOOP AND VERTICAL TENDONS



DOMES TENDONS

KEY
 ——— replacement surveillance tendon
 - - - - - original surveillance tendon

FLORIDA POWER & LIGHT CO.
 TURKEY POINT NUCLEAR POWER PLANT
 UNIT 3
 POST-TENSIONING SYSTEM
 SURVEILLANCE TENDONS
 LOCATION AND IDENTIFICATION
 FIGURE 1

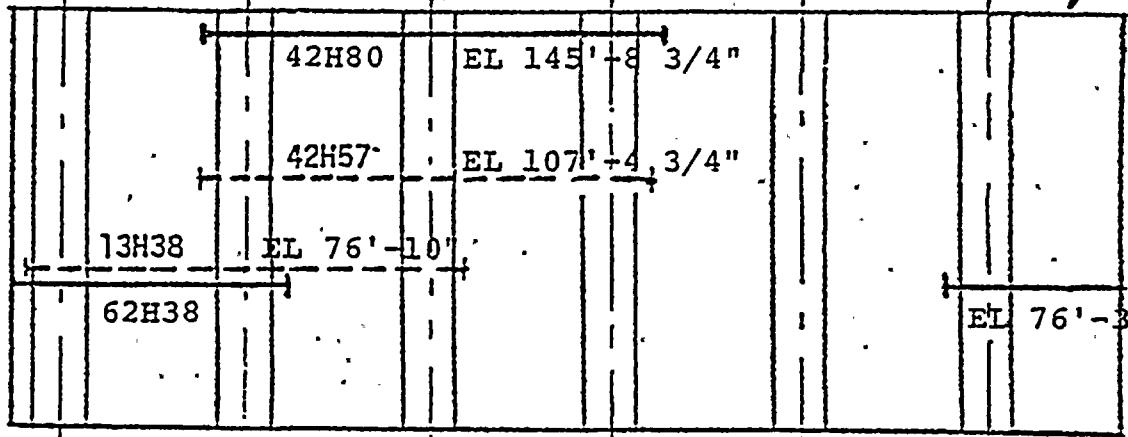
Buttress
Number

1 2 3 4 5 6

Azimuth

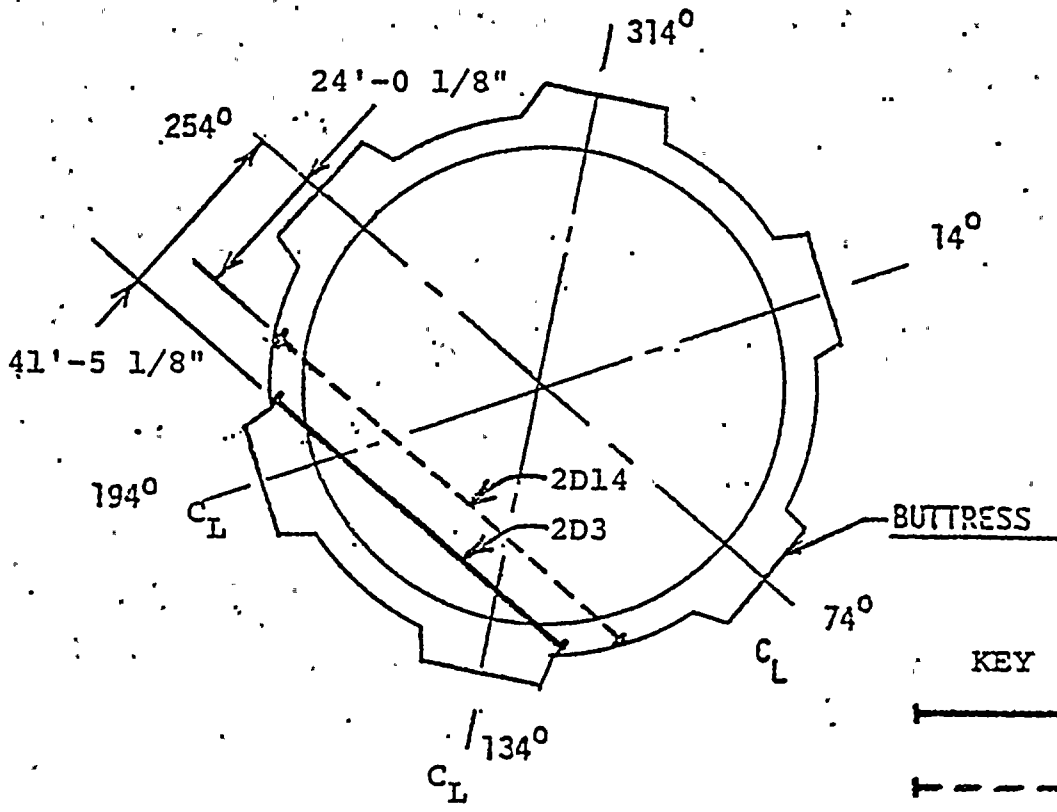
134° 74° 14° 314° 254° 194°

BOTTOM OF
RING GIRDER
EL 150'-0"



TOP OF BASE SLAB
EL 12'-6"

DEVELOPED EXTERIOR ELEVATION
HOOP AND VERTICAL TENDONS



BUTTRESS

- KEY
- replacement surveillance tendon
 - original surveillance tendon

PLAN
DOME TENDONS

FLORIDA POWER & LIGHT CO.
TURKEY POINT NUCLEAR POWER PLANT
UNIT 4
POST-TENSIONING SYSTEM
SURVEILLANCE TENDONS
LOCATION AND IDENTIFICATION

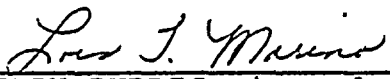
FIGURE 2

STATE OF FLORIDA)
)
COUNTY OF DADE) ss.

Robert E. Uhrig, being first duly sworn, deposes and says:
That he is a Vice President of Florida Power & Light Company,
the Licensee herein;
That he has executed the foregoing document; that the state-
ments made in this said 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.


Robert E. Uhrig

Subscribed and sworn to before me this
29th day of September, 1977


NOTARY PUBLIC, in and for the County of Dade,
State of Florida

My commission expires: _____
NOTARY PUBLIC STATE OF FLORIDA - LARGE
MY COMMISSION EXPIRES AUGUST 21, 1981
BONDED THRU MAYNARD BONDING AGENCY

