



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**  
WASHINGTON, D.C. 20555-0001

September 29, 1995

Mr. Percy M. Beard, Jr.  
Senior Vice President,  
Nuclear Operations (NA2I)  
Florida Power Corporation  
ATTN: Manager, Nuclear  
Licensing  
Crystal River Energy Complex  
15760 W Power Line Street  
Crystal River, Florida 34428-6708

**SUBJECT: ISSUANCE OF SCHEDULAR EXEMPTION FROM THE REQUIREMENTS OF 10 CFR PART 50, APPENDIX J, FOR REGARDING DELAY OF NEXT REQUIRED TYPE A LEAKAGE RATE TEST - CRYSTAL RIVER NUCLEAR GENERATING PLANT UNIT 3 (TAC NO. M92438)**

Dear Mr. Beard:

By letter dated May 19, 1995, as supplemented August 8, 1995, you requested a one-time schedular exemption to delay performance of a Type A test, as required by 10 CFR Part 50, Appendix J, for a period of approximately 24 months.

The NRC staff has reviewed the information provided in support of your schedular exemption request. On the basis of the submitted information and as discussed in the enclosed Exemption, the NRC staff has concluded that there is a high degree of confidence that the containment will not degrade to an unacceptable extent while this Exemption is in effect. Thus, the NRC staff has concluded that your request is justified and your request for a schedular exemption to delay performance of the Type A test until the 1998 refueling outage is granted, provided that the general containment inspection is performed during the spring 1996 outage.

We find that granting the Exemption from the requirements of 10 CFR Part 50, Appendix J, Section III.D.1.(a), is authorized by law, will not present an undue risk to public health and safety, is consistent with the common defense and security, and meets the special circumstances described in 10 CFR 50.12(a)(2)(ii).

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September 29, 1995

A copy of the Exemption is enclosed. The Exemption has been forwarded to the Office of the Federal Register for publication.

Sincerely,

(Original Signed By)

David B. Matthews, Director  
Project Directorate II-1  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Docket No. 50-302

Enclosure: Exemption

cc w/encl: See next page

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\* See previous concurrence

Mr. Percy M. Beard  
Florida Power Corporation

Crystal River Unit No. 3  
Generating Plant

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Memorandum Dated September 29, 1995

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"Primary reactor containments for water cooled power reactors shall be subject to the requirements set forth in Appendix J to this part." 10 CFR 50, Appendix J, sets forth requirements for periodic verification by tests of the leak-tight integrity of the primary reactor containment and establish the acceptance criteria for such tests to satisfy general design criterion 16 of the Commission's regulations. 10 CFR 50, Appendix J, Paragraph III.D.1, specifies a set of three integrated leak rate tests (ILRT or Type A test) to be performed at approximately equal intervals during each 10-year service period. Such tests are to be limited to periods when the plant is non-operational and secured in the shutdown condition under an administrative control and in accordance with the safety procedures defined in the license.

For CR-3, the next available opportunity for performing the ILRT would be in spring 1996. The licensee requested a one-time interval extension for the ILRT by approximately 24 months from the spring 1996 refueling outage to the spring 1998 refueling outage. The licensee indicated that approval of its request would save over two million dollars and reduce personnel radiation exposure. An exemption from 10 CFR 50, Appendix J, Paragraph III.D.1, is needed to permit the licensee to defer the ILRT.

By letter dated May 19, 1995, as supplemented August 8, 1995, the licensee submitted its exemption request for this purpose.

### III

Pursuant to 10 CFR 50.12, the Commission may, upon application by any interested person or upon its own initiative, grant exemptions from the requirements of 10 CFR Part 50 when (1) the exemptions are authorized by law, will not present an undue risk to public health and safety, and are consistent with the common defense and security; and (2) when special circumstances are

present. Special circumstances are present whenever, according to 10 CFR 50.12(a)(2)(ii), "Application of the regulation in the particular circumstances would not serve the underlying purpose of the rule or is not necessary to achieve the underlying purpose of the rule..." The underlying purpose of 10 CFR 50, Appendix J, Paragraph III.D.1., is to assure that periodic surveillance of reactor containment penetrations is performed so that proper maintenance and repairs are made during the service life of the containment, and leakage through the primary reactor containment shall not exceed allowable leakage rate values as specified in the technical specifications (TS) or associated bases.

#### IV

In support of its exemption request, the licensee submitted information pertaining to Type A, and local leak rate (LLRT or Types B and C) testing history, structural capability, and risk assessment to demonstrate that the proposed exemption would not present an undue risk to the public health and safety and would be consistent with the common defense and security, and would be authorized by law. The licensee indicates that the Type A testing frequency of Appendix J is not necessary to achieve the underlying purpose of the regulation and thus special circumstances required by 10 CFR 50.12(a)(2)(ii) apply to this situation.

The CR-3 containment is a reinforced concrete structure with a cylindrical wall, a flat foundation mat, and a shallow dome roof. The cylinder wall is prestressed with a post-tensioning system in the vertical and horizontal directions. The dome roof is prestressed using a three-way post-tensioning system. The inside surface of the containment has a carbon steel liner to ensure a high degree of leak-tightness during operating and accident

conditions. The liner is anchored to the concrete to ensure composite action with the concrete shell. Piping penetrations have been designed to ensure that the liner would not be breached due to rupture of any process pipe. The containment is designed with an allowable leakage rate of 0.25% of containment air weight per day ( $L_a$ ) at the calculated maximum allowable containment pressure ( $P_a$ ) of 54.2 psig resulting from the limiting design basis accidents.

The historical Type A test results as set forth in the exemption request demonstrate that CR-3 has a low-leakage containment. The current 10-year inservice inspection and inservice testing service period is the second service period and started in March 1987 and ends in March 1997. During this service period, the licensee performed one ILRT in November 7, 1991. A prior ILRT conducted in November 1987 was counted as the third test of the first 10-year interval and therefore, the licensee did not take credit for the November 1991 test for the current interval. These two ILRTs which have been performed during the last seven years have shown acceptable containment leakage rates. There have been no permanent or temporary modifications to the containment structure, liner or penetrations since the last two Type A tests, and no future modifications are planned prior to the 1998 refueling outage that could adversely affect the Type A test results.

The licensee will continue to be required to conduct the Type B and C local leak rate tests, which are in general the principal means of detecting containment leakage paths, with the Type A tests confirming the Type B and C test results. Types B and C testing history at CR-3 shows that the overall combined as-found leakage has been less than the allowed combined leakage rate of  $0.6 L_a$  (266,431 SCCM) at the calculated maximum peak containment pressure as specified in Appendix J. Successful performance of Types B and C testing

demonstrates the leak-tightness of the penetrations and associated components and provides a high degree of assurance that the overall Type A leakage rate would remain satisfactory while this exemption is in effect. The licensee has stated that it will perform the general containment inspection, although it is required by Appendix J (Section V.A.) to be performed only in conjunction with Type A tests. The NRC staff considers that these inspections, though limited in scope, provide an important added level of confidence in the continued integrity of the containment boundary.

The purpose of containment leak testing is to detect containment leakage which could be the result of failures (active or passive) before an accident occurs. Containment leakage caused by degradation of sealing material within containment penetrations and containment isolation components will continue to be effectively measured by the Type B and C testing programs. The Type A tests are only confirmatory of the results of the Type B and C test results. The only potential failures not covered by Types B and C testing are failures of the containment due to structural deterioration because of parameters such as pressure or temperature. However, structural deterioration would require longer than the proposed period for the exemption.

There are no mechanisms that would adversely affect the structural capability of the containment, which is the only leakage mode not captured by the Type B and C testing that will be performed. Absent actual accident conditions, structural deterioration of containment due to temperature, radiation, chemical, or other such effects is a gradual phenomenon requiring periods of time well in excess of the proposed interval extension and is subject to detection by periodic visual inspections. At CR-3, there has been no evidence of structural deterioration that would impact structural integrity

or leak tightness. Other than postulated accident conditions, the only over-pressure challenge to containment is the integrated leak rate test itself.

Thus, there is significant assurance that the extended interval between Type A tests in concert with Type B and C testing will continue to provide adequate verification of the leak tight integrity of the containment. The proposed one-time change in Type A leakage test frequency only affects the length of time that the containment could be in an undetected failed state as a result of a failure. As part of the CR-3 Individual Plant Examination (IPE) program, the risk of losing containment integrity is considered negligible compared to other risks such as those resulting from small break loss of coolant accidents or station blackout.

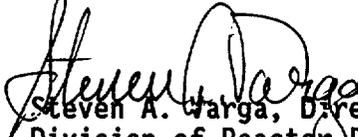
Draft NUREG-1493, which provides the technical justification for the ongoing Appendix J rulemaking effort (including a 10-year test frequency), has shown that essentially all containment leakage can be detected by LLRTs (Type B and C). According to results given in NUREG-1493, only 5 ILRT failures out of 180 ILRT reports that covered 110 individual reactors and approximately 770 years of operating history, were found that local leak rate testing could not have detected. Therefore, it is unlikely that this one-time exemption for the performance of Type A testing at CR-3 would result in significant degradation of the overall containment integrity.

In summary, the testing history, structural capability of the containment, and the risk assessment discussed previously establish that 1) CR-3 has had acceptable containment leakage rate test results, 2) the structural integrity of containment is assured, and 3) there is negligible risk impact in changing the Type A test schedule on a one-time basis.

Therefore, application of the regulation in this particular circumstance would not serve, nor is it necessary to achieve, the underlying purpose of the rule, and the exemption request meets the requirements of 10 CFR 50.12.

Accordingly, the Commission has determined that, pursuant to 10 CFR 50.12(a), an exemption is authorized by law, will not endanger life or property or common defense and security, and is otherwise in the public interest. Therefore, the Commission hereby grants Florida Power Corporation a one-time exemption from those requirements of 10 CFR 50, Appendix J, relating to containment overall leak rate test and allows deferring the performance of a Type A test from the spring 1996 to the spring 1998 refueling outage, provided that the general containment inspection is performed during the spring 1996 outage. Pursuant to 10 CFR 51.32, the Commission has determined that the granting of this exemption will not result in any significant adverse environmental impact (60 FR 46320).

FOR THE NUCLEAR REGULATORY COMMISSION

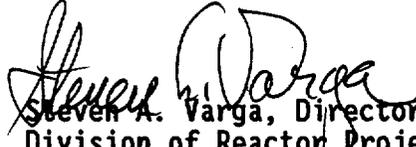
  
Steven A. Warga, Director  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Dated at Rockville, Maryland,  
this 29th day of Sept. 1995.

Therefore, application of the regulation in this particular circumstance would not serve, nor is it necessary to achieve, the underlying purpose of the rule, and the exemption request meets the requirements of 10 CFR 50.12.

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FOR THE NUCLEAR REGULATORY COMMISSION

  
Steven A. Varga, Director  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Dated at Rockville, Maryland,  
this 29th day of Sept. 1995.