

POOR ORIGINAL

Docket No. 50-302

Florida Power Corporation
ATTN: J. T. Rodgers
Assistant Vice President
and Nuclear Project Manager
P. O. Box 14042
St. Petersburg, Florida 33733

Gentlemen:

FEB 11 1977

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RE: FISSION GAS RELEASES FROM FUEL PELLETS
(CRYSTAL RIVER UNIT 3 NUCLEAR GENERATING PLANT)

The NRC staff has recently obtained information which indicates that fission gas releases from fuel pellets with high burnup may be under-predicted by the current industry models for fission gas release. As a result, actual end-of-life fuel rod pressure may be higher than that which was considered in the safety analysis for your facility. Although this situation does not lead us to suspect that fuel design limits have been or are currently being exceeded at your facility, the potential may exist for such an occurrence in the future as higher fuel burnups are reached. Consequently, you are requested to evaluate the effects of increased fission gas releases on the safety analysis for your facility in accordance with the schedule specified below.

If the estimated date on which any fuel rod in your facility will reach a local exposure (burnup) of 20,000 Megawatt-days per metric ton of Uranium (MWD/tU) is sooner than June 1, 1977, provide the following information within 30 days of receipt of this letter. (If this estimated date is later than June 1, 1977, your response may be submitted within 90 days of receipt of this letter).

- The estimated date on which any fuel rod in your facility will reach a local exposure (burnup) of 20,000 Megawatt-days per metric ton of Uranium (MWD/tU).
- Using the correction technique described in the attached enclosure, modify the fission gas release model in the thermal performance code for the fuel in your facility and calculate the fission gas release, fuel rod pressure, fuel temperature, etc. for burnups up to and including the

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FEB 11 1977

target peak-rod burnup. Provide a comparison of the results of your calculations with those obtained using the uncorrected fission gas release model.

- c. Describe the impact (if any) of larger fission gas releases on the LOCA analysis and other safety analyses for your facility.
- d. If internal fuel rod pressures, as calculated using the above-mentioned fission gas release correction, are predicted to exceed the nominal system pressure for your facility, provide the date that this is anticipated to occur and discuss the implications of operating under both normal and accident conditions with fuel cladding tensile stresses.

We have advised all U. S. fuel manufacturers by separate correspondence that this information request is being sent to licensees of operating power reactors. In our letter to the fuel manufacturers, we have indicated that bounding calculations for appropriate plant groupings would be acceptable.

This request for generic information was approved by GAO under a blanket clearance number B-180225 (R0072); this clearance expires July 31, 1977. Three signed originals and 40 copies of your response will be required.

Sincerely,

Original Signed by

John F. Stolz

John F. Stolz, Chief
Light Water Reactors Branch No. 1
Division of Project Management

Enclosure:
Burnup-Dependent Correction
for Fission Gas Release
Models

cc w/enclosure:
See next page

POOR ORIGINAL

OFFICE	LWR 1	LWR 1				
SURNAME	J. Angelo/reu	J. Stolz				
DATE	2/11/77	2/17/77				

FEB 11 1977

Florida Power Corporation

- 3 -

cc: Mr. S. A. Brandimore
Vice President and General Counsel
P. O. Box 14042
St. Petersburg, Florida 33733

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