

December 23, 1987

Docket No. 50-302

DISTRIBUTION

Mr. W. S. Wilgus  
Vice President - Nuclear Operations  
Florida Power Corporation  
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Dear Mr. Wilgus:

SUBJECT: CRYSTAL RIVER UNIT 3 - EXEMPTION FROM REQUIREMENTS OF  
10 CFR 50, APPENDIX A, GENERAL DESIGN CRITERION-17

The Commission has issued the enclosed exemption from the requirements of  
10 CFR 50, Appendix A, General Design Criterion-17 (GDC-17), which allows  
the diesel generators at Crystal River Unit 3 to be operated at the  
maximum calculated accident load during the next fuel cycle.

A copy of the exemption is being forwarded to the Office of the Federal  
Register for publication.

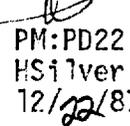
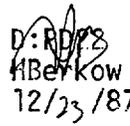
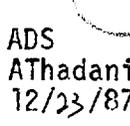
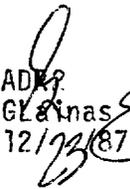
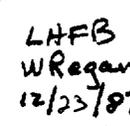
Sincerely,

/s/

Herbert N. Berkow, Director  
Project Directorate II-2  
Division of Reactor Projects-I/II  
Office of Nuclear Reactor Regulation

Enclosure:  
As stated

cc w/enclosure:  
See next page

							
LA: PDR2	PM: PD22	D: RDR2	ADS	OGC	ADM	DRP	LHFB
DMiller	HSilver	HBerkow	ATHadani	JScinto	GLainas	SVarga	WRegan
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Mr. W. S. Wilgus  
Florida Power Corporation

Crystal River Unit No. 3 Nuclear  
Generating Plant

cc:

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UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

In the Matter of

FLORIDA POWER AND LIGHT  
COMPANY, et. al.

(Crystal River  
Unit 3)

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Docket No. 50-302

EXEMPTION

I.

Florida Power Corporation, et. al. (FPC, the licensee) are the holders of Facility Operating License No. DPR-72, which authorizes operation of Crystal River Unit 3 (CR3, the facility) at steady-state power levels not in excess of 2544 megawatts thermal. The license provides, among other things, that the facility is subject to all the rules, regulations, and Orders of the Nuclear Regulatory Commission (the Commission) now or hereafter in effect.

The facility is a pressurized water reactor (PWR) located at the licensee's site in Citrus County, Florida.

II.

General Design Criterion-17 (GDC-17) requires that the onsite power supply (diesel generators) for nuclear plants be of sufficient capacity and capability to assure that (1) specified acceptable fuel design limits and design conditions of the reactor coolant pressure boundary are not exceeded as a result of anticipated operational occurrences, and (2) the core is cooled and containment integrity and other vital functions are maintained in the event of postulated accidents. NRC Safety Guide 9 (and subsequently Regulatory Guide 1.9) describes

a basis for selection of a diesel generator of sufficient capacity to implement GDC-17. It indicates that predicted diesel generator loads should not exceed the lower of the 2000 hour rating or 90 percent of the 30 minute rating.

### III.

An inspection recently performed by the staff identified discrepancies between the surveillance requirements of the Technical Specifications (TS) and the manufacturer's recommendations related to the diesel generator ratings. In reviewing this situation and verifying loads, the licensee identified an error in the load calculations. Diesel generator loads were recalculated using conservative best estimates based on actual equipment configuration for each accident scenario and, after deleting certain unnecessary loads, it was determined that for all accident scenarios except two, maximum diesel generator loads for one of the two emergency diesel generators, generator "A", would be within the 2000 hour rating. The two scenarios, involving large and intermediate size loss-of-coolant accidents (LOCAs), loss of offsite power, and failure of either diesel generator "B" or emergency feedwater pump "B", result in calculated auto-connected loads of approximately 3228 KW. Although this is in excess of the 2000 hour rating, it is within the 30 minute rating of the diesel generator. Certain auto-connected loads not needed for these scenarios can and will be manually tripped prior to 30 minutes. Dropping these loads will reduce the load demand on generator "A" to a level within the 2000 hour rating.

The auto-connected loads in the original plant design were below the 2000 hour rating of the diesel generators. However, loads have been added to the diesel generators, the largest of which is the electric emergency feedwater pump motor, added after the TMI-2 accident. This additional load has resulted in generator "A" being loaded in the 30 minute rating.

By letter dated December 14, 1987, the licensee requested a temporary exemption from the requirements of GDC-17, in accordance with 10 CFR 50.12(a), until the next scheduled refueling outage. In that letter, the licensee referenced its letter dated November 16, 1987 and the information transmitted therewith. The licensee's letter of December 16, 1987 further describes testing to be performed which will support this request for exemption. The licensee's letter of November 20, 1987 describes alternatives the licensee is examining to bring the facility in compliance with GDC-17, and commits to submit to the Commission by March 30, 1988 its proposed actions.

This case involves special circumstances as set forth in 10 CFR 50.12(a)(2)(v). The exemption will provide only temporary relief until the end of the next refueling outage, by which time the licensee is to be in full compliance with GDC-17, and the licensee has made a good faith effort to comply with GDC-17. Promptly upon identifying the problem of diesel generator capacity, the licensee undertook a number of analyses and design modifications in order to reduce auto-connected loads on the diesels to levels acceptable for long-term operation. Although the licensee has been able to reduce load estimates to within the 2000 hour rating of generator "B" and to within the 30 minute rating of generator "A", it has not been able to reduce auto-connected loads to within the 2000 hour rating of generator "A".

Specifically, the licensee:

- removed loads not required for safety from the diesel while retaining required loads,
- employed adequately conservative scenario-based load analyses,
- provided additional guidance, procedures, and training to the plant operators to permit timely and effective load management, and

-- designed automatic load control features which would have prevented exceedance of the 2000 hour rating but which were determined by the staff to be undesirable for other reasons.

Compensatory measures and features proposed and committed to by the licensee to be completed before exceeding 5% power and to be in effect during the temporary exemption period include the following:

- (1) Control room alarms have been provided which will alert the operators initially when the diesels are operating in the 30 minute rating and again when 5, 24, and 29 minutes of that period have expired.
- (2) Operators are well-trained in the facility's symptom-based emergency operating procedures and will receive additional training and guidance to better equip them to manage diesel generator loads by tripping those which are not required for any particular scenario in order to bring the loads within the 2000 hour rating in a timely manner. The licensee has stated that when load management is necessary, a dedicated operator will be available to accomplish that function.
- (3) Individual loads will be tested to verify the calculated values and the diesel generators will be tested to demonstrate their ability to handle the expected accident loads.

On the following basis, the staff concludes that operation of the facility with the diesels functioning in the manner described above, including the additional compensatory measures discussed, provides a level of safety for the period of the exemption equivalent to that provided by compliance with GDC-17.

- (1) The exemption is only temporary in nature, lasting about 24 months until the next refueling outage.
- (2) The auto-connected load demand exceeds the 2000 hour rating of diesel generator "A" only for two very unlikely scenarios.
- (3) The potential loss of offsite power occurring simultaneously with such unlikely scenarios is remote.
- (4) The low probability of simultaneous loss of diesel generator "B" or emergency feedwater pump "B" reduces risk even further.
- (5) The compensating measures described above include measures to assure that loads not needed to cope with the accidents imposing the greatest demand can and will be dropped while generator "A" is still within its 30 minute rating.

The licensee has supplied reliability assessments which indicate that the probability of simultaneous occurrence of all the failures necessary to produce the highest load on diesel generator "A" is between  $10^{-7}$  and  $10^{-8}$ . This further supports the staff's conclusion that an adequate level of safety exists for the duration of the exemption.

#### IV.

Based on the above and on our review of the licensee's submittals, the staff concludes that: (1) the licensee's load calculations are acceptable, provided they are confirmed by valid tests, (2) loads not needed to mitigate any particular design basis accident scenario can be tripped within 30 minutes to bring the load on the "A" diesel generator to within the 2000 hour rating, and (3) the diesel generators will remain operable so that accident consequences

previously analyzed will not be affected by this exemption. The NRC staff therefore finds the proposed temporary exemption from the requirements of GDC-17 of Appendix A to 10 CFR Part 50 to be acceptable.

Accordingly, the Commission has determined that, pursuant to 10 CFR 50.12, this exemption is authorized by law, will not present an undue risk to the public health and safety, and is consistent with the common defense and security. The Commission further determines that special circumstances, as provided in 10 CFR 50.12(a)(2)(v), are present justifying the exemption, namely that the exemption would provide only temporary relief from the applicable regulation and that FPC has made a good faith effort to comply with the regulations.

Therefore, the Commission hereby approves the following exemption from the requirements of GDC-17: The facility may operate with predicted loads for diesel generator "A" within the 30 minute rating of the diesel generator for not more than 30 minutes, provided that (1) the principal estimated loads are confirmed by test as described in the licensee's letters dated November 16, 1987, December 14, 1987 and December 16, 1987, and (2) operators are trained, and alarms and procedures are provided as described in the licensee's letters dated November 16 and December 14, 1987, and, when required, a dedicated operator will be available for load management. This exemption shall expire at the end of the next refueling outage.

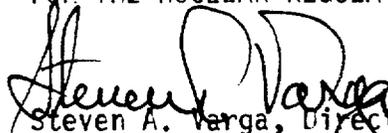
Pursuant to 10 CFR 51.32, the Commission has determined that granting this exemption will have no significant effect on the environment (52 FR 48351, December 21, 1987).

For further details with respect to this action, see the licensee's request dated November 14, 1987, as supplemented November 20, December 14 and December 16, 1987, which are available for public inspection at the Commission's

Public Document Room, 1717 H Street, NW., Washington, DC 20555 and at the Crystal River Public Library, 668 N.W. First Avenue, Crystal River, Florida 32629.

This exemption is effective upon issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



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

Dated at Bethesda, Maryland  
this 23rd day of December, 1987.