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 50-389 St. Lucie Plant, Unit 2, Florida Power & Light Co. 05000389  
 AUTH. NAME: AUTHOR AFFILIATION  
 WILLIAMS, J.W. Florida Power & Light Co.  
 RECIP. NAME: RECIPIENT AFFILIATION  
 THOMPSON, H.L. Division of Licensing

SUBJECT: Forwards responses to Items 1 & 3 of NRC 840702 Generic Ltr  
 84-15, "Proposed Staff Actions to Improve & Maintain Diesel  
 Generator Reliability."

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 TITLE: OR Submittal: Fast Cold Starts of Diesel Generators GL-83-41 (GL-84-15)

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FLORIDA POWER & LIGHT COMPANY

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L-85-53

Office of Nuclear Reactor Regulation  
Attention: Mr. Hugh L. Thompson, Jr.  
Division of Licensing  
U. S. Nuclear Regulatory Commission  
Washington, D. C. 20555

Dear Mr. Thompson:

Re: St. Lucie Units 1 and 2  
Docket Nos. 50-335, 50-389  
Generic Letter 84-15

In response to NRC letter dated July 2, 1984, "Proposed Staff Actions to Improve and Maintain Diesel Generator Reliability (Generic Letter 84-15)", FPL has provided information concerning item 2 by FPL letter L-84-274 dated October 23, 1984. Enclosures 1 and 2 provide FPL's remaining responses to items 1 and 3 of subject letter.

Very truly yours,

J. W. Williams, Jr.  
Group Vice President  
Nuclear Energy

JWW/RWG/js

Attachment

cc: Harold F. Reis, Esquire  
PNS-LI-85-102-1

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## Enclosure I

### Response to Item I to Generic Letter 84-15

#### NRC Request

#### I. Reduction in Number of Cold Fast Start Surveillance Tests for Diesel Generators

This item is directed towards reducing the number of cold fast start surveillance tests for diesel generators which the staff has determined results in premature diesel engine degradation. The details relating to this subject are provided in Enclosure I. Licensees are requested to describe their current programs to avoid cold fast start surveillance testing or their intended actions to reduce cold fast start surveillance testing for diesel generators.

#### FPL Response

Item one requests Technical Specification changes intended to reduce fast cold starts. However the Item I proposed change does not reduce the total number of starts. As written, the NRC proposed specification can be interpreted in two ways, one of which increases total starts.

One interpretation of the proposed specification is that diesel generator fast starts be conducted once every 184 days and all other starts be "design idle starts". By our current design this means the diesel would start, come to idle speed and after a warm-up period be released from idle and brought to full speed at 900 rpm. The diesel generator would then be synchronized and loaded per existing Technical Specifications.

The second interpretation is that an idle start and warm-up would be conducted followed by a shutdown. After a short period a diesel generator start-up would be conducted from non-ambient conditions. FPL notes that this second interpretation would increase the number of starts and believes this would have no benefit in minimizing mechanical stress and wear on the diesel engine. Therefore, FPL would favor and be encouraged to change Technical Specifications based only on the first interpretation.

Prior to technical specification changes at St. Lucie, a need exists to clarify the meaning of this proposed specification from item I to ensure the industry and NRC understand the intent.

It should be noted that Unit 2 has a continuously operating prelubrication system as part of the present diesel generator design and that design may already meet the intent of the proposed technical specification. Unit 1 has a diesel generator specification change submittal to the NRC in response to a previous commitment covering several testing requirements.

## Enclosure 2

### Response to Item 3 to Generic Letter 85-15

#### NRC Request

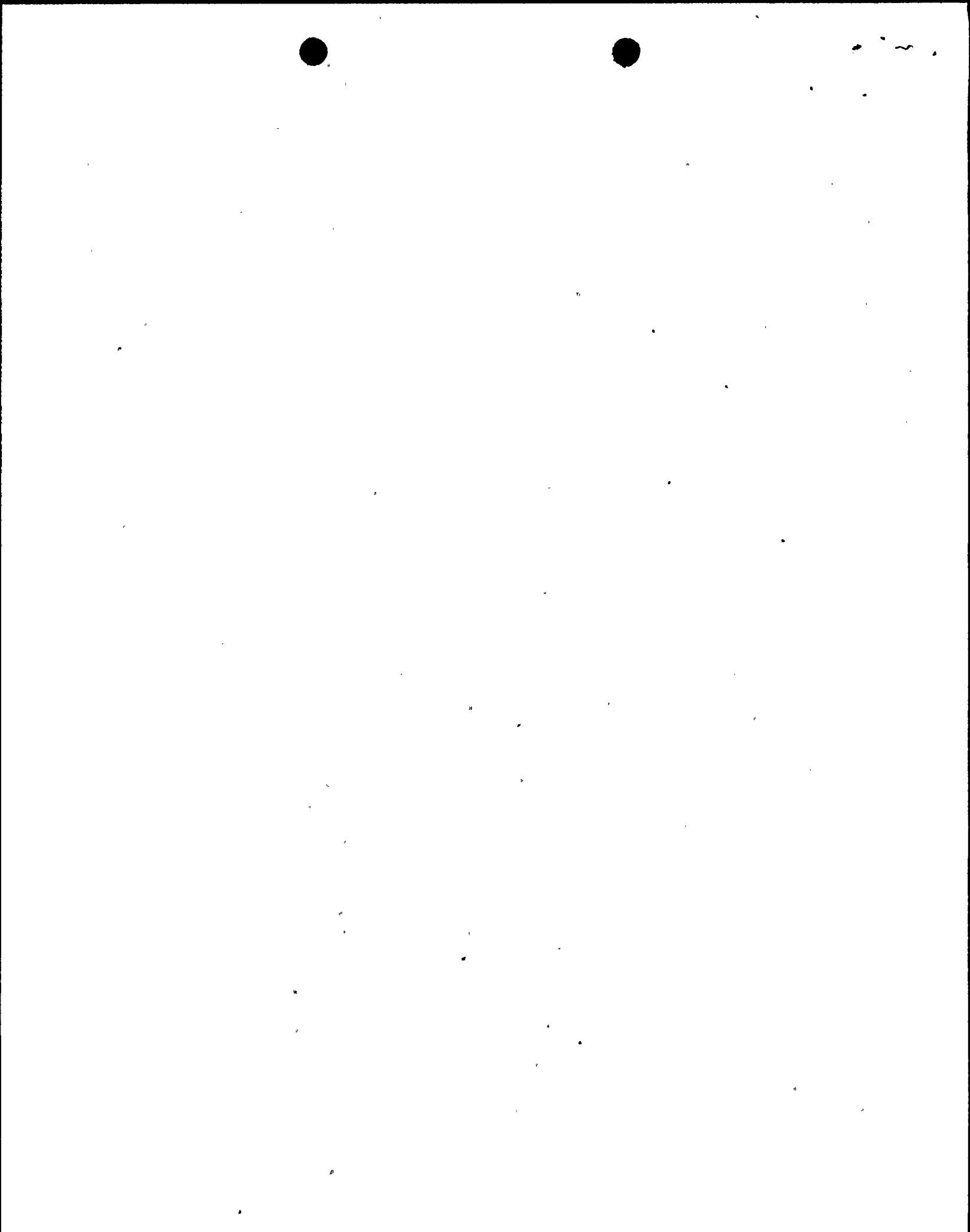
3. Licensees are requested to describe their program, if any, for attaining and maintaining a reliability goal for their diesel generators. An example of a performance Technical Specification to support a desired diesel generator reliability goal has been provided by the staff in Enclosure 3. Licensees are requested to comment on, and compare their existing program or any proposed program with the example performance specification.

#### FPL Response

At St. Lucie, Florida Power & Light has not had a formal diesel reliability program. For St. Lucie Unit 1, over the years, FPL has implemented 24 design changes and many procedure changes to enhance diesel generator operation, maintenance and reliability. St. Lucie Unit 2 started up with the benefits of these lessons learned from Unit 1. FPL has reviewed NUREG CR/0660, "Enhancement of On-Site Emergency Diesel Generator Reliability" and believes St. Lucie meets the intent of those requirements. FPL specifically notes that the previously mentioned St. Lucie Unit 2 diesel generator prelubrication system is carefully designed to ensure the system cannot cause the problems mentioned in CR/0660. (Especially hydraulic lock due to oil leakage into a cylinder).

As requested by Enclosure 3 to Generic letter 84-15, we are providing the following comments on the reliability program proposed in (Draft) Technical Specification 3.8.1.1 (Appendix A to Generic Letter 84-15).

- 1) These specifications are a significant improvement over the existing standard specifications. This is especially true of the reduced number of operability check starts required by the proposal. We urge the NRC to retain this feature of the proposal. We believe each start, even under ideal conditions, is a transient on the diesel generator unit which should not be imposed unnecessarily. Under present technical specifications nearly two thirds of diesel starts are due to these operability checks and very few are due to any kind of failure. Rather, most are due to preventative maintenance and calibrations of relays, breakers, off-site power transformers and the diesel generators. We estimate the proposal would reduce total starts by one quarter to one third and still provide proper, timely verification of diesel generator operability. We note that the proposal still will need clarifications of the fast cold start issue raised in our response to item 1.
- 2) A licensee proposed "out-of-service" time criteria based on the manufacturer's recommendations and previous maintenance and repair experience is an excellent change to Action "b", however, we are concerned about the maximum cumulative total time criteria as described below:



- a) The "accounting procedure" for this criteria would be a unnecessary administrative burden on the control room staff.
- b) As written, no provision is made for plant outages when a diesel generator is allowed to be out of service per Technical Specifications. This time historically has been available and used for maintenance, periodic overhauls, and desirable modifications to the diesel generators.
- c) No mention is made regarding action to be taken should the diesel generators exceed the maximum cumulative time.
- d) Depending on the action required, we note that such a maximum time limit could be counter productive as preventive maintenance and calibrations could be postponed or cancelled should the diesel generators approach the time limit during the year.

We believe b and c above must be resolved and urge careful consideration to the remainder of the issue. We suggest the NRC consider the following:

- maximum cumulative time for failures only, or
- planned outages (non-failure) should not exceed X hours/week and shall not exceed 4X hours/month per diesel generator.

The maximum time for an individual diesel generator to be inoperable (due to failures) (now generally 72 hours) would still receive appropriate attention due to the other provisions of the proposed specifications regarding the number of failures.

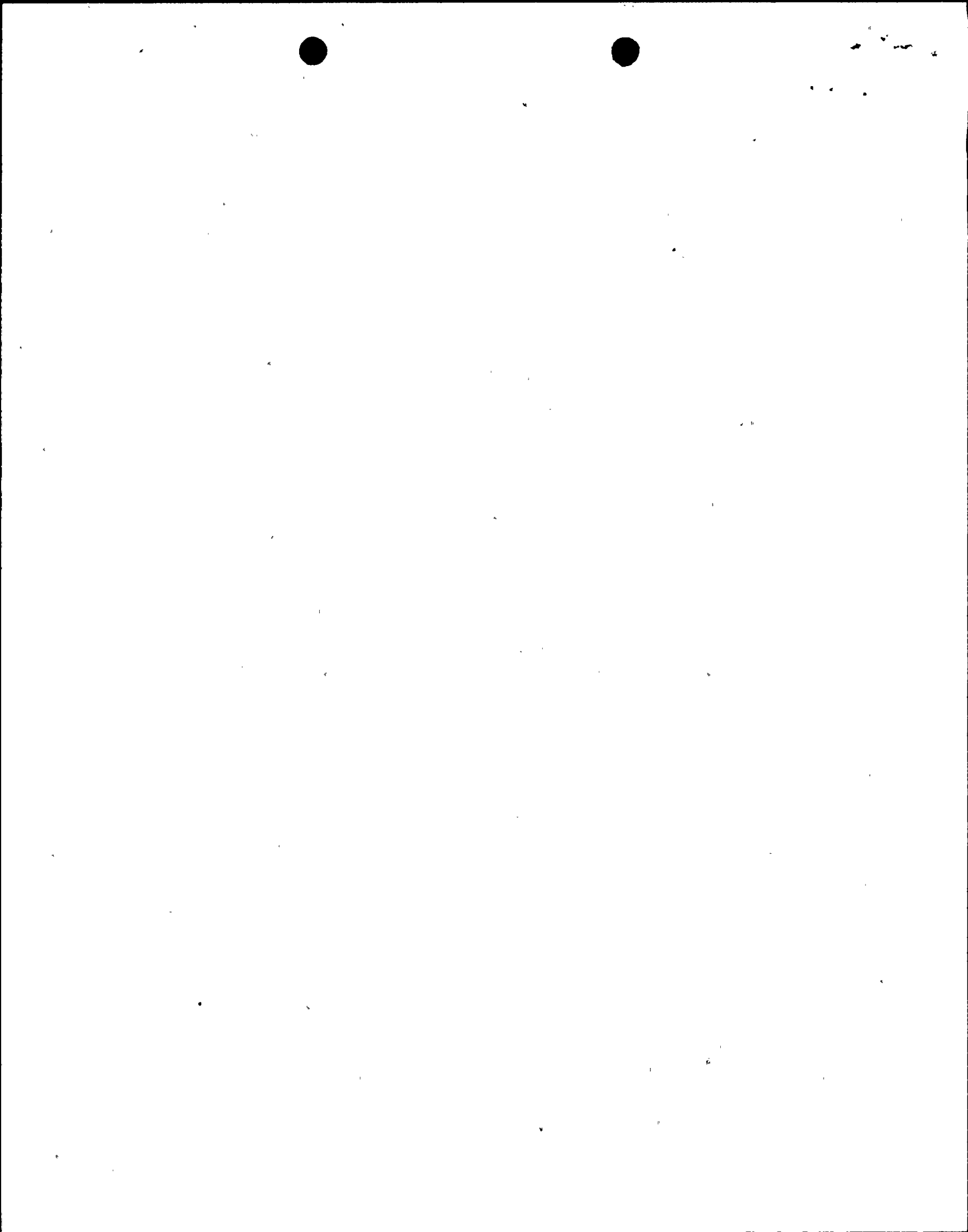
- 3) Both post maintenance testing requirements and the proposed Technical Specifications require a significant number of diesel generator operability check starts with no requirement (or need) for loading. Apparently, the NRC believes these starts are meaningful or they would not be required. However, this appears to be in direct contradiction to Reg. Guide 1.108 criteria for valid tests. Over half of the successful diesel generator starts are not counted as valid tests, however, any failures (per Reg Guide 1.108) must be counted. This provides a very misleading profile of diesel generator reliability. As a specific example, when the response to Item 2 of Generic Letter 84-15 was prepared, FPL had successfully started the St. Lucie Unit 2 diesel generator units over 140 times since issuance of the operating license, however only about 50 would be considered "valid" tests. (Unit 1 figures were comparable.)

Based on the above we recommend that the "valid test" definition in the Technical Specifications from Regulatory Guide 1.108 be changed. We suggest the following to replace item C.2.e. (4) "Successful starts that are terminated intentionally without loading or terminated intentionally after brief loading should be considered valid tests for use in reliability statistics".

- 4) Technical Specification section 4.8.1.1.2.C should be reconsidered and streamlined especially regarding testing before adding fuel oil to the tanks.

Some of these tests are difficult and time consuming to do. Typically only a small fraction of total fuel tank volume is added at any one time. One of the required tests does not measure the present condition of the fuel.





Rather, the test measures stability of the fuel and what will occur after some period of storage. This test requirement apparently came from NUREG CR/0660 which stated that the only fuel related problem noted was long term storage with only 10 - 20% usage per year. These tests need not be eliminated, but should not be required before fuel is added to a tank due to significant logistical problems created. Unit 1, which does not have the test before addition requirements, has had no fuel oil quality problems in nine years. For the above reasons, the St. Lucie Unit 2 fuel oil Technical Specifications are a modification of the Standard Technical Specifications for fuel oil.

FPL appreciates the opportunity to comment on this issue.

