



**Entergy
Operations**

Entergy Operations, Inc.

P.O. Box 8
Kilona, LA 70066
Tel 504-739-6661

R. P. Barkhurst

Vice President
Operations
Waterford 3

W3F1-93-0033

A4.05

PR

May 6, 1993

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC. 20555

Subject: Waterford 3 SES
Docket No. 50-382
License No. NPF-38
Technical Specification Change Request NPF-38-134

Gentlemen:

The attached description and safety analysis support a change to the Waterford 3 Technical Specifications. The proposed change modifies Technical Specification Surveillance 4.8.1.1.2.d.2 to increase the Emergency Diesel Generator voltage limit on full load rejection. The proposed change stems from concerns identified in NRC Information Notice 91-13 "Inadequate Testing of Emergency Diesel Generators" (EDGs), issued on March 4, 1991.

The proposed change has been evaluated in accordance with 10 CFR 50.91(a)(1), using the criteria in 10 CFR 50.92(c) and it has been determined that this request involves no significant hazards consideration.

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Technical Specification Change Request NPF-38-134

W3F1-93-0033

Page 2

May 6, 1993

Should you have any questions or comments, please contact Paul Caropino at (504) 739-6692.

Very truly yours,



R.P. Barkhurst
Vice President, Operations
Waterford 3

RPB/PLC/stf

Attachment: Affidavit
NPF-38-134


cc: J.L. Milhoan (NRC Region IV), D.L. Wigginton (NRC-NRR),
R.B. McGehee, N.S. Reynolds, NRC Resident Inspectors Office,
Administrator Radiation Protection Division (State of
Louisiana), American Nuclear Insurers

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the matter of)
)
Entergy Operations, Incorporated) Docket No. 50-382
Waterford 3 Steam Electric Station)

AFFIDAVIT

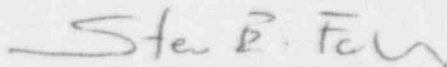
R.P. Barkhurst, being duly sworn, hereby deposes and says that he is Vice President Operations - Waterford 3 of Entergy Operations, Incorporated; that he is duly authorized to sign and file with the Nuclear Regulatory Commission the attached Technical Specification Change Request NPF-38-134; that he is familiar with the content thereof; and that the matters set forth therein are true and correct to the best of his knowledge, information and belief.



R.P. Barkhurst
Vice President Operations - Waterford 3

STATE OF LOUISIANA)
) ss
PARISH OF ST. CHARLES)

Subscribed and sworn to before me, a Notary Public in and for the Parish and State above named this 5TH day of MAY, 1993



Notary Public

My Commission expires WITH LIFE

DESCRIPTION AND SAFETY ANALYSIS
OF PROPOSED CHANGE NPF-38-134

Technical Specification (TS) Surveillance 4.8.1.1.2.d.2 and associated Bases have been revised to increase the maximum voltage value specified for the Emergency Diesel Generator (EDG) during the full load rejection test.

Existing Specifications

See Attachment A

Proposed Specifications

See Attachment B

Description

NRC Information Notice (IN) 91-13 "Inadequate Testing of Emergency Diesel Generators" was issued to alert licensees to inadequacies in the testing of emergency diesel generators at nuclear power plants. Specifically some EDG testing has not adequately verified the capability of the EDG to carry its maximum loads. Upon evaluating IN 91-13, Waterford 3 identified an EDG testing improvement such that the problems experienced at other sites could be avoided. It was subsequently discovered that the current TS requirements are too restrictive to allow for the improved testing, thus prompting the following proposed change.

In TS Surveillance 4.8.1.1.2.d.2, the Emergency Diesel Generator voltage limit during load rejection is being changed from 4784 volts to 5023 volts. This Surveillance, in part, demonstrates the capability of the EDG to reject full load without exceeding the predetermined voltage limit. The Surveillance is performed every 18 months during shutdown consistent with the recommendations of Regulatory Guide 1.108 "Periodic Testing of Diesel Generator Units Used As Onsite Electric Power Systems at Nuclear Power Plants", August 1977, Regulatory Position C.2.a(4).

The issue in IN 91-13 that relates to this Technical Specification change concerns the 24 hour EDG load test. This test verifies the ability of the EDG to dependably carry the worst case accident load.

The 24 hour EDG load test is required by TS 4.8.1.1.2.d.6. The final step of the 24 hour load test is the load rejection test required by TS 4.8.1.1.2.d.2. The EDG voltage limit (4784V) during the load rejection test is affected by the steady state voltage prior to the load rejection test (i.e. the higher the EDG steady state voltage prior to the load rejection test, the higher the EDG voltage will be during the load rejection test). The reactive power delivered by the EDG has been increased as a result of the recommendation in IN 91-13. The increase in reactive power delivery results in a higher EDG steady state voltage which in turn increases the EDG voltage during load rejection.

Information Notice 91-13 states that the EDG should be tested to carry at least the reactive and real power required by the worst case accident load. TS 4.8.1.1.2.d.6 requires loading the EDG between 4200-4400 KW for 22 hours, and between 4700-4900 kW for two hours. The TS does not mention reactive power load.

The EDGs at Waterford 3 have been tested at approximately 4400 kW and 1000 KVARs for 22 hours and approximately 4840 kW and 1000 KVARs for 2 hours. The 4400 kW load meets the recommendations of IN 91-13, however, the 1000 KVAR load is less than that required during the worst case accident load at Waterford 3 (2600 kVARs is needed during the worst case accident).

In response to IN 91-13, the test procedures for the 24 hour EDG load test were revised to increase the reactive power load to a range of 2700 to 3300 kVARs. However, this increase in reactive power load resulted in a higher EDG steady state voltage than experienced in the past. The subsequent load rejection test per TS 4.8.1.1.2.d.2 (conducted as a post-maintenance test during Refuel 5) resulted in slightly exceeding the 4784V EDG voltage limit. The test results were discussed with the manufacturer and it was determined that the EDG was being tested too stringently (i.e., expecting the EDG voltage during the load rejection test to be <4784V may not be possible if the EDG steady state voltage is above 4160V prior to the load rejection test). The EDG was retested at a lower steady state voltage (though still >4160V) and passed the load rejection test.

The current TS EDG voltage limit of 4784V is derived by multiplying 4160V(i.e. rated EDG voltage) times 1.15(115%). The EDG manufacturer indicated that performing the load rejection test with the EDG steady state voltage above 4160V may result in a voltage above 4784V. The manufacturer also stated that determining that the voltage requirements are met during the load rejection test ensures that components electrically connected to the EDG are not damaged as a result of the momentary voltage excursion. In addition, the manufacturer confirmed that 4400V plus 15% (5060V) would be an acceptable upper limit for the EDG voltage during the load rejection test which would not result in EDG component damage.

The EDG voltage during the load rejection is dependent upon its steady state voltage prior to the test. In order to determine a conservative EDG voltage limit during load rejection test, EDG performance was considered at its upper steady state voltage. The EDG is rated to perform within the limits of its capability curve at a maximum voltage of 4160V plus 5% (i.e.4368V). Thus, a value of 4368V plus 15% (i.e., 5023V) was chosen. This technical specification change will allow the EDG to be tested as described in IN 91-13.

Safety Analysis

The proposed change described above shall be deemed to involve a significant hazards consideration if there is a positive finding in any of the following areas:

1. Will operation of the facility in accordance with this proposed change involve a significant increase in the probability or consequences of any accident previously evaluated?

Response: No

Maintaining EDG voltage during a load rejection test verifies the ability of the voltage regulator to respond to a sudden loss of load. The ability of the voltage regulator to limit the voltage to a specific value indicates proper operation and prevents electrical component damage.

The EDG voltage during load rejection is not part of any limiting accident previously evaluated. While the EDG is not expected to experience this transient during an event and continues to be available, the response ensures that the EDG is not degraded for future application, including reconnection to the bus if the trip initiator can be corrected or isolated.

The proposed change will have no negative impact on the reliability or performance of the EDG. Therefore, the proposed change will not involve a significant increase in the probability or consequences or any accident previously evaluated.

2. Will operation of the facility in accordance with this proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No

The proposed technical specification change to the EDG voltage limit will accommodate conditions such as reactive power loading during load rejection. The present conditions assume the EDG steady state voltage will be 4160V. However, with the EDG parallel to the grid, operating at rated real and reactive power may not be possible with unfavorable grid conditions. Thus, to test the EDG within its capability, the voltage limit during load rejection must be changed to allow for increased reactive power loading recommended by IN 91-13. This technical specification change does not involve a change in design, function, method of testing, or operation of the EDG. The proposed amendment will not alter the plant or the manner in which it is operated. Therefore, the proposed change will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Will operation of the facility in accordance with this proposed change involve a significant reduction in a margin of safety?

Response: No

The proposed technical specification change is to allow the EDG voltage limit during load rejection to account for increased reactive power loading recommended by IN 91-13.

This change will have no adverse impact on protective boundaries or safety limits. Therefore, the proposed change will not involve a significant reduction in a margin of safety.

Safety and Significant Hazards Determination

Based on the above safety analysis, it is concluded that: (1) the proposed change does not constitute a significant hazards consideration as defined by 10 CFR 50.92; and (2) there is a reasonable assurance that the health and safety of the public will not be endangered by the proposed changes; and (3) this action will not result in a condition which significantly alters the impact of the station on the environment as described in the NRC final environmental statement.