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QA

January 30, 1992

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Subject: Waterford 3 SES
Docket No. 50-382
License No. NPF-38
Technical Specification Change Request NPF-38-121

Gentlemen:

The attached description and safety analysis support a modification of 3/4.8-2, D.C. Sources - Operating and Table 4.8-2, Battery Surveillance Requirements, of the Waterford 3 Technical Specifications. These changes resulted from discussions that took place during the recent electrical distribution inspection (Inspection 90-23). As indicated in the safety analysis, these changes do not involve a significant hazards consideration as defined by 10 CFR 50.92.

Entergy Operations, Inc. feels these plant specific changes would result in an improvement in plant safety and therefore, should be worthy of your review. Please direct any questions or comments to Tim Gaudet on (504) 739-6666.

Very truly yours,

R.P. Barkhurst
RPB/PLC/ssf

Attachment: Affidavit
NPF-38-121

cc: R.D. Martin, 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)
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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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

AFFIDAVIT

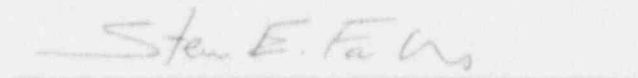
R.P. Barkhurst, being duly sworn, hereby deposes and says that he is Vice President Operations - Waterford 3 of Entergy Operations, Incorporated; that he is duly authorized to sign and file with the Nuclear Regulatory Commission the attached Technical Specification Change Request NPF-38-121; that he 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 30th day of JANUARY, 1992.



Notary Public

My Commission expires WITH LIFE.

DESCRIPTION AND SAFETY ANALYSIS
OF PROPOSED CHANGE NPF-38-121

This proposal requests a change to Waterford 3 Technical Specification (TS) 3/4.8.2, D.C. Sources - Operating, and Table 4.8-2, Battery Surveillance Requirements. The changes raise the average electrolyte temperature of a sample of battery cells from 60°F to 70°F and adjusts the limits for specific gravity in Table 4.8-2 to be consistent with technical specification bases and vendor information.

Existing Specifications

See Attachment A

Proposed Specifications

See Attachment B

Description

The changes requested in this submittal concern Waterford 3 TS 3/4.8.2 and Table 4.8-2 which discuss operability of the on-site D.C. power sources (station batteries.) One change concerns TS 4.8.2.1.b.3 which describes surveillances on the station battery electrolyte temperature averaged over a random sample of connected cells. Entergy Operations, Inc. wishes to increase the minimum limit for this temperature from 60°F to 70°F. Another change concerns Table 4.8-2 which contains surveillance requirements for the station batteries. Entergy Operations, Inc. is requesting to raise the specific gravity limits in this table by 0.005 to be consistent with the bases and vendor technical information. These two changes resulted from discussion associated with the Waterford 3 electrical distribution system functional inspection (EDSFI) as documented in IR 50-382/90-23.

The Waterford 3 125 Volt D.C. System is designed to provide a Class 1E source of reliable continuous power for the Plant Protection System control and instrumentation and other loads for start-up, operation, and shutdown under normal and emergency conditions. It consists of three, sixty cell, 125 volt batteries, each with its own battery chargers, load centers and distribution panels. These three banks of batteries, designated 3A-S, 3B-S and 3AB-S and their associated load centers and distribution panels, are arranged to feed the safety related redundant dc loads and the non-safety related loads associated with divisions A, B and AB. Batteries 3A-S and 3B-S are rated at twelve hundred ampere-hours for an eight hour rate of discharge or six hundred ampere-hours for a one hour rate of discharge to 1.75 volts per cell at 25°C (77°F.) The 3AB-S battery is rated 2400 ampere-hours for an eight hour rate of discharge to 1.75 volts per cell at 25°C.

Section 2.6.3.1 of IR 50-382/90-23 discusses existing battery capacity. During the inspection, the team was given some battery sizing worksheets. They noticed the worksheets identified a minimum electrolyte temperature of 77°F (the standard rating used by IEEE-485). This was inconsistent with a plant TS that identifies a minimum temperature of 60°F. As such, either a new calculation supporting 60°F should be supplied or the specification should be changed.

Unable to support the 60°F temperature. Design Engineering performed calculations to establish a minimum specification temperature limit which would include adequate design margin. Engineering revealed that the heaters in the HVAC system are Safety Class 3 while the heating coils for the battery rooms are Safety Class 2. During a design basis event, at least one HVAC heater is assumed to fail. To prevent the other heaters should fail, heat would continue to be supplied to the room by various sources and heat transmission from adjacent areas. If the room temperature would start to drop due to the cooler air supply, the temperatures of the electrolyte will start to decrease, although this will not occur if the room contains heat. Calculations show that the electrolyte temperature would drop to as low as 73.3°F in a 24-hour period, therefore, a minimum electrolyte temperature of 70°F is selected for evaluation. Calculation E-91-052 shows that at 70°F, the electrolyte still contains sufficient capacity such that the batteries can carry the rated loads.

This calculation requires a specification change to define the minimum electrolyte temperature as 70°F. Increasing the minimum average electrolyte temperature to 70°F represents an increase in the minimum battery capacity and, therefore, the minimum stored energy allowed by the specification. This means an increase in protection; hence, a more conservative specification. As such, this change does not represent a reduction in safety.

IR 50-382/90-25 identified another concern stating that the TS surveillances of battery electrolyte specific gravity were inconsistent with manufacturer requirements documented in the vendor technical manual. TS Table 4.8-2 contains surveillance requirements for the station batteries. In the bases for this specification, maximum difference permitted for the electrolyte from the manufacturer's fully charged specific gravity is specified. As stated in Bases 3/4.8

Table 4.8-2 specifies the normal limits for each designated pilot cell and each connected cell for specific gravity. The limits for the designated pilot cells specific gravity, 0.015 below the manufacturer's full charge specific gravity, is characteristic of a charged cell with adequate capacity. The normal limits for each connected cell for specific gravity, not more than 0.020 below the manufacturer's full charge specific gravity with an average specific gravity of all the connected cells not more than 0.010 below the manufacturer's full charge specific gravity, ensures the operability and capability of the battery.

"Operation with a battery cell's parameter outside the normal limit but within the allowable value specified in Table 4.8-2 is permitted for up to 7 days. During this 7-day period: (1) the allowable value for the average specific gravity of all the cells, not more than 0.020 below the manufacturer's recommended full charge specific gravity, ensures that the decrease in rating will be less than the safety margin provided in sizing the battery; (2) the allowable value for the average specific gravity of all the cells, not more than 0.010 below the manufacturer's recommended full charge specific gravity, ensures that the decrease in rating will be less than the safety margin provided in sizing the battery; (3) the allowable value for an individual cell's specific gravity will not be more than 0.040 below the manufacturer's full charge specific gravity and that the overall capability of the battery will be maintained within an acceptable limit; . . ."

These criteria are identical with those established in the Combustion Engineering (CE) standard TSs which assume a manufacturer's recommended full charge specific gravity of 1.215. Operating within specific gravity limits based on these allowances ensures operability of the battery and its capability to perform its design function. Consistent with the CE standard TSs, batteries at Waterford 3 have a nominal fully charged specific gravity of 1.215 (at 77°F.) When applying the allowances from the bases to the manufacturer's full charge specific gravity,

the limits in Table 4.8-2 are all too low by 0.005. Engineering investigated this and could not find any supporting basis for the discrepancy. Consequently, this change is being requested to correct these limits based on the allowances from the TS bases as applied to the vendor specifications.

Table 4.8-2 identifies three different kinds of requirements for specific gravity. The left column, Category A, establishes limits for the pilot cells. The middle and right columns identify normal and allowable values for the connected cells. Normal limits for the connected cells are established for everyday operation while outside normal limits or allowable values are established for unusual situations.

These "allowable values" permit operation to continue provided it is not for more than seven days. Most of these limits are based on the manufacturer's full charge specific gravity, 1.215. To bring them into agreement with design, they must be increased by 0.005. Raising these limits creates a more limiting TS since an increased minimum specific gravity means the limiting condition allowed by the TS establishes more stored energy in the battery. Hence, the change is more conservative and does not represent a reduction in safety.

Safety Analysis

The proposed changes 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 the operation of the facility in accordance with these proposed changes involve a significant increase in the probability or consequence of any accident previously evaluated?

Response: No

Previously analyzed accidents that are potentially affected by this change are those that require operation of the station batteries. This would include all accidents that postulate the loss of offsite power (LOOP) concurrent with the accident (e.g., a loss of coolant accident with a LOOP.) For these accidents, the batteries provide field flash and power to the control system to start the EDGs. Additionally, the station batteries are needed for the station blackout event to carry essential loads. This proposal requests changes to Waterford 3 specifications that increase the minimum amount of stored energy that can be contained in the batteries. These changes do not have a negative impact on the reliability or performance of the station batteries and, therefore, have no actual impact on any previously analyzed accident in the Final Safety Analysis Report. As such, the operation of Waterford 3 in accordance with the proposed changes does not involve a significant increase in the probability or consequence of any accident previously evaluated.

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

Response: No

To create a new or different kind of accident, these changes will have to introduce a new failure path. Only surveillances for the station batteries are affected. No design requirements for the station batteries or power distribution systems are altered. Because the proposed amendment would not change the design, configuration or method of operation of the plant, it

would not create the possibility of a new or different kind of accident.

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

Response: No

Increasing the minimum average electrolyte temperature and specific gravity allowed by TSs means the minimum stored energy that can be contained in the batteries is increased. This represents a general improvement in safety. The modification does not change the design basis for any equipment in the plant. Since existing TS operability and surveillance requirements are not reduced by the proposed changes, the operation of Waterford 3 in accordance with these changes does not involve a reduction in any margin of safety.


The Commission has provided guidance concerning the application of standards for determining whether a significant hazards consideration exists by providing certain examples (48 FR 14870) of amendments that are considered not likely to involve significant hazards considerations. The changes identified in this submittal closely match example (ii):

"(ii) A change that constitutes an additional limitation, restriction or control not presently included in the technical specifications; for example, a more stringent surveillance requirement."

Although the proposed changes represent increased restriction on existing surveillances rather than the introduction of new surveillances to the TSs, they most closely resemble example (ii) since they are quite clearly, "a more stringent surveillance requirement."

Safety and Significant Hazards Determination

Based on the above Safety Analysis, it is concluded that: (1) the proposed changes do 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 that significantly alters the impact of the station on the environment as described in the NRC Final Environmental Statement.



NPF-38-121
ATTACHMENT A