



ENTERGY

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Waterford 3

W3F1-93-0303
A4.05
PR

December 14, 1993

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-38-147

Gentlemen:

The attached description and safety analysis support a change to the Waterford 3 Technical Specifications (TS). The proposed amendment would change the TS 3/4.2.3 Azimuthal Power Tilt Limit from ≤ 0.10 (10%) to ≤ 0.03 (3%). This change resolves a discrepancy between the Combustion Engineering (CE) Safety Analysis that assumed the Azimuthal Power Tilt at $\leq 3\%$ and the TS that allows operation with an Azimuthal Power Tilt of $\leq 10\%$.

The proposed change has been evaluated in accordance with 10CFR50.91(a)(1) using the criteria in 10CFR50.92(c) and it has been determined that this change involves no significant hazards considerations.

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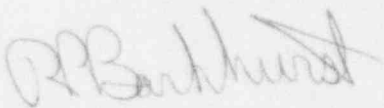
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Technical Specification Change Request NPF-38-147
W3F1-93-0303

Page 2
December 14, 1993

Should you have any questions or comments concerning this request, please contact P.L. Caropino at (504) 739-6692.

Very truly yours,



R.P. Barkhurst
Vice President, Operations
Waterford 3

RPB/PLC/dc
Attachment: Affidavit
NPF-38-147

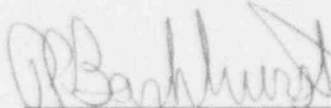
cc: J.L. Milhoan, NRC Region IV
D.L. Wigginton, NRC-NRR
R.B. McGehee
N.S. Reynolds
NRC Resident Inspectors Office
Administrator Radiation Protection Division
(State of Louisiana)
American Nuclear Insurers

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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

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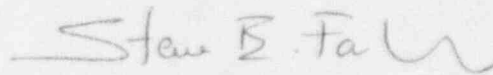
R.P. Barkhurst, being duly sworn, hereby deposes and says that he is Vice President Operations - Waterford 3 of Entergy Operations, Incorporated; that he is duly authorized to sign and file with the Nuclear Regulatory Commission the attached Technical Specification Change Request NPF-38-147; that he 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 14TH day of DECEMBER, 1993.



Notary Public

My Commission expires WITH LIFE.

DESCRIPTION AND SAFETY ANALYSIS
OF PROPOSED CHANGE

This proposal requests a change to Waterford 3 Technical Specification 3/4.2.3 "Azimuthal Power Tilt" from 0.10 (10%) to 0.03 (3%).

Existing Specification

See Attachment A

Proposed Specification

See Attachment B

Description

The proposed change revises Technical Specification 3/4.2.3 "Azimuthal Power Tilt" Action statements and Bases. This specification requires that the actual tilt be less than or equal to the tilt allowance used in the Core Protection Calculators (CPCs) and be no greater than 3%.

The tilt is continuously monitored by the Core Operating Limit Supervisory System (COLSS) using the in-core detectors. Surveillance Requirements also state that the tilt must be calculated once per 12 hours when the COLSS is inoperable. The tilt is an input to the CPCs as an addressable constant, used in calculation of the maximum Local Power Density (LPD) and the minimum Departure from Nucleate Boiling Ratio (DNBR).

The purpose of this LCO is to limit the core power distribution to the initial values assumed in the accident analyses. The maximum tilt is an important factor in the analysis of single CEA movement events such as a CEA ejection or withdrawal. High azimuthal tilt values can result in local power peaks at the start of the event. High tilt values also increase the reactivity worth inserted by the CEA movement. When the CEA movement event is analyzed under these conditions, more severe consequences are calculated as a result of the higher local power peak and inserted worth. This leads to greater operating margin requirements to prevent DNB or limit the amount of fuel failure calculated to occur.

The proposed change reduces the maximum allowed azimuthal tilt from 10% to 3% to make the Technical Specification consistent with the safety analyses. This discrepancy between the ABB/CE safety analyses and the Technical Specifications has

apparently existed since fuel Cycle 2. However, an evaluation has concluded that Waterford 3 has not operated with a steady state power azimuthal tilt as calculated by COLSS greater than 3% above 20% thermal power. Therefore, the plant was not operated outside either the limits of the safety analysis or the design bases. Currently, administrative controls are in place to assure compliance with this requirement.

The current Azimuthal Power Tilt Limiting Condition for Operation (LCO) is formatted such that as long as the actual tilt is less than the value input to CPCs, adequate protection is provided. The proposed change modifies the existing LCO by placing a limit of 3% on the maximum azimuthal tilt during normal steady state power operation, consistent with safety analyses.

The proposed Technical Specification also changes Action item b.2 to allow 24 hours to restore the tilt to less than 3% following a CEA misalignment event (i.e., CEA drop). A CEA misalignment event (e.g., CEA drop event) causes an asymmetric core power generation and an increase in xenon concentration in the vicinity of the dropped rod. The xenon redistribution was not expected to cause an azimuthal tilt greater than the 10% limit in the current Technical Specification. However, it may cause the azimuthal tilt to exceed 3% for a short time. The existing 2 hour action time to reduce core power is not sufficient to recover from the xenon transient with a lower tilt limit of 3%, rather than the existing 10% tilt limit. The 24 hour period allows for correction of the misaligned CEA and allows time for the xenon redistribution effects to dampen out due to radioactive decay and absorption. The reduction in xenon concentration (which is aided by operation at full power) will in turn reduce the tilt below the 3% limit.

The 24 hour period is applicable only to a CEA misalignment where the cause of the tilt has been identified. It is based on the time required for the expected xenon transient to dampen out. All other conditions (not due to a CEA misalignment) where the azimuthal tilt exceeds 3% continue to require action within the existing 2 hours.

The additional time for recovery from a CEA misalignment is acceptable for the following reasons:

- Consistent with the safety analyses, this TS, places a limit on tilt for steady state operation as an initial condition for the safety analyses. It is not a limit to be applied during transients. This is because accident analyses are initiated from steady state conditions and are not required to assume a core power distribution transient simultaneous with or immediately prior to the accident. This would in effect be two accidents occurring simultaneously.

- The probability of having an accident immediately after a CEA drop during the 24 hour period allowed for tilt to be restored to less than 3% is very low.
- Technical Specification 3/4.1.3 addresses the CEA misalignments and requires a 30% power reduction within one hour if the CEA cannot be restored to its proper position.
- Reducing power as required in TS 3.2.3 action b.2 will tend to increase the azimuthal tilt, making the transient worse. A lower power reduces the rate at which xenon near the dropped CEA can be burned out. Maintaining power will quicken the process and keep the tilt as low as possible.
- The additional time is only allowed for a confirmed CEA misalignment which operators have procedures to respond to. The change in tilt is expected and is not indicative of anomalous core power distribution behavior that might require more immediate action.

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

Response: No

This change conservatively reduces the Azimuthal Power Tilt technical specification limit to agree with the assumptions used in the safety analysis. The lower tilt represents a more even power distribution in the core. A CEA drop event may temporarily cause the azimuthal power tilt to exceed the 3% limit. However, for the reasons identified above and since the probability of having another event within the 24 hours allowed for recovery after the CEA drop is extremely low, this change does not involve a significant increase in the probability or consequences of any accident.

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

Response: No

The change in technical specification limit on tilt does not involve any change to any equipment or the manner in which the plant will be operated. This change will further restrict unevenness in the core power distribution. Therefore, this change does not create the possibility of a new or different kind of accident previously evaluated.

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

Response: No

The proposed change incorporates an Azimuthal Power Tilt technical specification limit to agree with the assumptions used in the safety analysis. Implementation of this change will preserve the margin of safety and be consistent with the safety analyses. Therefore, this change does not involve a significant reduction in margin of safety.

Safety and Significant Hazard 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 change; 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.