



Entergy

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Waterford 3

W3F1-98-0032
A4.05
PR

May 1, 1998

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
Supplement to Technical Specification Change
Request NPF-38-198

Gentlemen:

On June 3, 1997, Waterford 3 submitted Technical Specification Change Request (TSCR) NPF-38-198. That letter requested changes to the ACTIONS required should a channel of the Recirculation Actuation Signal (RAS) be placed in the tripped condition. This was based on a scenario in which a single failure occurring at a specified time during an accident could prevent the correct functioning of the RAS. In that request, Waterford 3 committed to review other Engineering Safety Features Actuation Systems (ESFAS) to ascertain if a similar scenario could occur in one of them. Waterford 3 has determined that a similar scenario could occur with the Emergency Feedwater Actuation System (EFAS). While developing a separate Technical Specification Change Request (TSCR) for the EFAS, Waterford 3 identified a better way to organize the ACTIONS for both EFAS and RAS. During the NRC's review of the RAS TSCR, the NRC Staff had come to the same conclusion. The original ACTIONS were divided as to whether an inoperable channel was placed in the bypass or tripped condition. Therefore based on these reviews, this supplement is providing an improved ACTION format. This improved format is based on how many channels are inoperable.

Also, based on conversations with your Staff, other enhancements are being made to the discussion of the change. Revision bars are provided in the "Description and No Significant Hazards Evaluation" section of this document to identify sections that have

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changed from the original submittal. Although the No Significant Hazards Evaluation remains unchanged, it is provided for completeness. The Attachments A and B to this TSCR are intended to replace the original Attachments A and B in their entirety. Revision bars are not provided in Attachments A and B.

This 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 request involves no significant hazards consideration.

The circumstances surrounding this change do not meet the NRC's criteria for exigent or emergency review. However, Waterford 3 is currently operating with administrative controls in place due to non-conservative ESFAS Technical Specifications. Entergy Operations requests the effective date for this change be within 60 days of approval.

Should you have any questions or comments concerning this request, please contact Early Ewing at (504) 739-6242.

Very truly yours,



C.M. Dugger
Vice President, Operations
Waterford 3

CMD/CWT/rtk
Attachments: Affidavit
NPF-38-198

cc: E.W. Merschoff, NRC Region IV, C.P. Patel, NRC-NRR,
T.W. Alexion, NRC-NRR, J. Smith, 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

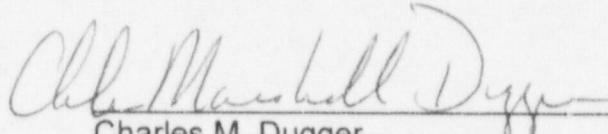
Entergy Operations, Incorporated
Waterford 3 Steam Electric Station

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Docket No. 50-382

AFFIDAVIT

Charles M. Dugger, 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 Supplement to Technical Specification Change Request NPF-38-198; 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.



Charles M. Dugger
Vice President Operations - Waterford 3

STATE OF LOUISIANA

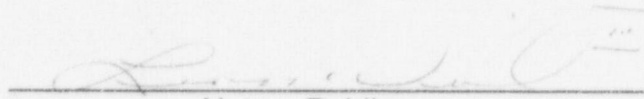
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PARISH OF ST. CHARLES

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Subscribed and sworn to before me, a Notary Public in and for the Parish and State above named this 1st day of May, 1998.



Notary Public

My Commission expires at death.

DESCRIPTION AND NO SIGNIFICANT HAZARDS EVALUATION OF PROPOSED CHANGE NPF-38-198

The proposed change requests a change to the ACTION Requirements for Technical Specification 3/4.3.2 for the Safety Injection System Sump Recirculation Actuation Signal (RAS). This change revises the allowed outage time for a channel of RAS to be in the tripped condition from "prior to entry into the applicable MODE(S) following the next COLD SHUTDOWN" to the more restrictive time limit of 48 hours and adds a shutdown requirement. Additionally, the 3.0.4 exemption is being removed from the ACTION for the tripped condition. A change to the Technical Specification Basis Section 3/4.3.2 has been included to support this change.

Existing Specification

See Attachment A

Proposed Specification

See Attachment B

Background

The Safety Injection System Sump Recirculation Actuation Signal (RAS) is initiated by a 2 out of 4 logic for the Refueling Water Storage Pool (RWSP) low signal. If this occurs in conjunction with a containment spray actuation signal or a safety injection actuation signal, the RAS system will change the mode of operation of the Containment Spray (CS) System and the Safety Injection System. The RAS automatically stops the Low Pressure Safety Injection (LPSI) pumps and changes the CS and High Pressure Safety Injection (HPSI) pump suction from the RWSP to the Safety Injection System Sump. The RAS is designed to automatically realign the CS and HPSI systems for long term operation following a Design Basis Accident by diverting the suction of these pumps from the RWSP to the Safety Injection System Sump, when the contents of the RWSP are nearing depletion.

The postulated condition could occur when one channel of the RAS is in the "tripped" condition and a loss of coolant accident or excess steam demand event occurs. In these scenarios, prior to the RWSP reaching the low level setpoint, a failure occurs such that a second channel produces a low level trip signal. If this were to occur prior to there being adequate water in the Safety Injection System Sump from the reactor coolant system leak and containment spray, the HPSI pumps and CS pumps would have their suctions supplied by an inadequate source of water and the LPSI pumps would stop. Although the RWSP outlet valves would remain open, the containment

pressure would rise above RWSP outlet pressure, which would cause the RWSP outlet check valves to seat. In effect, this would allow a single failure (the failure of the second channel of RAS in the tripped condition) to remove both trains of HPSI, LPSI, and CS from service.

Description and Safety Considerations

The current TS ACTION 13 requires that, with one inoperable RAS channel, the channel be placed in the bypass or tripped condition within 1 hour. With two channels of RAS inoperable, TS ACTION 14 requires that one inoperable channel be placed in trip and the other inoperable channel be placed in bypass. In ACTION 13, continued operation is allowed in this configuration until entry into the applicable MODES following the next COLD SHUTDOWN. If the failures occurred at the start of an operating cycle, there is the potential for a channel to be in the bypassed condition for up to a maximum of 18 months. In ACTION 14, continued operation is allowed in the tripped condition until performance of the next required CHANNEL FUNCTIONAL TEST, which could be in three months.

Waterford 3 proposes to limit the time that one channel of RAS can be in the tripped condition to 48 hours. This will provide a reasonable amount of time for repair of a failed channel. The revised ACTIONS have been renumbered as ACTIONS 19 and 20. As the bypass function places RAS system in a 2 out of 3 logic, use of the bypass feature is not a concern as, with the resulting logic, a single failure would not cause a premature suction transfer. ACTION 19 has been revised to refer to the condition of one inoperable channel. The channel may be placed in the bypassed condition until the next entry into COLD SHUTDOWN. If placed in the tripped condition, a time limit of 48 hours is being imposed until the channel must be removed from the tripped condition. The 48 hours for the channel to be in the tripped condition is based on operating experience, which has demonstrated that a random failure of a second channel occurring during the 48 hour period is a low probability event. This allowed outage time for the tripped condition is consistent with the currently allowed time for the analog Combustion Engineering plants that do not have indefinite bypass. The Combustion Engineering (CE) analog plants use a time limit of 48 hours in NUREG 1432, "Standard Technical Specifications - Combustion Engineering Plants." Waterford 3 is considered to be a digital plant as it uses an Engineered Safety Features Actuation System (ESFAS) designed by CE and, therefore, does not have a specified time that a channel of ESFAS can remain in the tripped or bypassed condition.

The 48 hour time limit is more conservative than the allowed outage time of 72 hours for a complete train of Emergency Core Cooling System (TS 3.5.2) and Containment Spray (TS 3.6.2.1). Since the allowed outage time for a channel of RAS is being limited to 48 hours, this is considered an off-normal operation and a single failure is not required to be postulated during a Design Basis Accident in the accident analysis.

ACTION 20 addresses the condition in which two channels of RAS are inoperable. One channel must be placed in the bypassed condition and the other placed in the tripped condition. A time limit of 48 hours is imposed due to the channel being placed in the tripped condition.

The Waterford 3 ESFAS is designed for channel independence. The locations of the sensors and the points at which the sensing lines are connected to the process loop have been selected to provide physical separation of the channels, thereby precluding a situation in which a single event could remove or negate a protective function. The routing of cables from protective system transmitters is arranged so that the cables are separated from each other and from power cabling to minimize the likelihood of common event failures. This includes separation at the containment penetration areas. In the control room, protective system trip channels are located in individual compartments. Mechanical and thermal barriers between these compartments minimize the possibility of common event failure. Outputs from the components in this area to the control boards are isolated so that shorting, grounding, or the application of the highest available local voltages (120 VAC, 125 VAC) do not cause channel malfunction.

The probability of the premature RAS is remote. Based on the failure rate of these instruments, two concurrent failures would be highly unlikely. For this scenario to occur, the initial condition of one channel in the tripped condition would have to be in effect. Normally, the first channel to fail would be placed in the bypassed condition and a second failure would have to occur to have a channel in trip. During the time that the channel was in the tripped condition, a loss of coolant accident or main steam line break inside containment would have to occur. The failure of another channel would have to occur precisely at the time during an accident that the Emergency Core Cooling System (ECCS) was in the injection mode, and prior to the ECCS being in the recirculation mode. An inadvertent RAS actuation in the recirculation mode would be of no consequence as the components are already aligned for RAS at that time. For a loss of coolant accident, a variety of times can be postulated depending on break size, however, typically, operator action may be credited to mitigate the consequences of an accident after 30 minutes of entry into an event. Thus, the exposure would be limited to a 30 minute period during a loss of coolant accident. A similar scenario for a main steam line break can be postulated in which suction for the containment spray pumps is transferred to an empty containment sump. In summary, for a premature RAS to occur, two channels would have to initially be out of service (assuming one in bypass and one in trip) and a third channel fail to the actuated condition (a highly unlikely event) and the third failure would have to occur precisely during the injection phase of a loss of coolant accident or main steam line break (an even more remote possibility). Therefore, the allowed outage time of 48 hours is acceptable.

Due to the addition of a specified allowed outage time, the 3.0.4 exemption is no longer applicable to the tripped condition; therefore the exemption is being removed from the

ACTION for the tripped condition. The 3.0.4 exemption is still applicable for the bypassed condition as the allowed outage time for the bypassed condition remains until entry into the applicable MODES following the next entry into COLD SHUTDOWN, as before. This is specified in the ACTIONS and explained in the Bases.

An expanded Bases, consistent with NUREG 1432, "Standard Technical Specifications - Combustion Engineering Plants," has been added to support this change.

No Significant Hazards Evaluation

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 an accident previously evaluated?

Response: No

The proposed revision to the TS changes the allowed outage time that a channel of RAS can be in the tripped condition from a maximum of approximately 18 months when one channel is inoperable and 92 days when two channels are inoperable to 48 hours. If a channel were in the tripped condition and a single failure occurred (that of one other channel of RAS), a premature RWSP low level signal would be generated. During a Design Basis Accident with a containment high pressure condition causing the RWSP outlet check valves to seat, this single failure would prevent the contents of the RWSP from being injected into the reactor coolant system and possibly resulting in failure of both trains of ECCS and CS. Additionally, this would cause the LPSI pumps to stop. Reducing the time that a channel of RAS can be placed in the tripped condition will reduce the probability of this scenario occurring during a Design Basis Accident. Since the allowed outage time for a channel of RAS is being limited to 48 hours, this is considered an off-normal operation and a single failure is not required to be postulated during a Design Basis Accident in the accident analysis. Reducing the time the channel can be placed in the tripped condition and thus, the exposure time to this scenario, would not be an accident initiator. The proposed change of being more conservative in the time and condition limits in the TS will not affect the assumptions, design parameters, or results of any accident previously evaluated.

Therefore, the proposed change will not involve a significant increase in the probability or consequences of any accident previously evaluated.

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

Response: No

The proposed change does not change the design or configuration of the plant. The proposed change provides a more conservative allowed outage time for the channel to be in the tripped condition. There has been no physical change to plant systems, structures or components nor will the proposed change reduce the ability of any of the safety-related equipment required to mitigate Anticipated Operational Occurrences or accidents. In fact, this change will potentially increase the ability of safety related equipment to perform its functions. The configuration required by the proposed specification is permitted by the existing specification.

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 change provides a more conservative allowed outage time for the channel to be in the tripped condition. By reducing the allowed outage time, the probability is reduced that a single failure (that of a failure of one channel of RAS with one channel in the tripped condition) would occur that would cause the suction to be prematurely supplied by the Safety Injection System Sump, potentially disabling the HPSI and CS pumps, and stopping of the LPSI pumps.

Therefore, the only change to the margin of safety would be an increase. Since the allowed outage time for a channel of RAS is being limited to 48 hours, this is considered an off-normal operation and a single failure is not required to be postulated during a Design Basis Accident in the accident analysis. The proposed changes do not affect the limiting conditions for operation or their bases.

Therefore, the proposed change will not involve a significant reduction in a margin of safety.

Safety and Significant Hazards Determination

Based on the above No Significant Hazards Evaluation, it is concluded that: (1) the proposed change does not constitute a significant hazards consideration as defined by 10CFR50.92; 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.

NPF-38-198

ATTACHMENT A