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W3F1-2002-0018

Early C. Ewing, III
General Manager, Plant Operations
Waterford 3

February 27, 2002

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

SUBJECT: Waterford Steam Electric Station, Unit 3
Docket No. 50-382
Response to Request for Additional Information Regarding
Realignment of Refueling Water Storage Pool (RWSP) Boundary
Isolation Valves to RWSP Purification System

REFERENCES:

1. Entergy letter dated April 2, 2001, Realignment of Refueling Water Storage Pool (RWSP) Boundary Isolation Valves to RWSP Purification System
2. Entergy letter dated September 24, 2001, Response to Request for Additional Information Regarding Realignment of Refueling Water Storage Pool (RWSP) Boundary Isolation Valves to RWSP Purification System
3. NRC letter dated January 29, 2002, Waterford Steam Electric Station, Unit 3 – Request for Additional Information Related to Request for Review and Approval of Design Basis Change Regarding Realignment of Refueling Water Storage Pool (RWSP) Boundary Isolation Valves to RWSP Purification System

Dear Sir or Madam:

By letter (reference 1), Entergy Operations, Inc. (Entergy) proposed a change to the Waterford Steam Electric Station, Unit 3 (Waterford 3) design basis as described in the Final Safety Analysis Report. The change concerns design requirements for the alignment of the RWSP boundary isolation valves in the line to the RWSP purification system. This request was supplemented (reference 2) in response to a NRC staff request for additional information dated August 31, 2001.

This letter responds to the NRC staff request for additional information (reference 3) dated January 29, 2002. These questions were discussed with members of the staff during a conference call on January 22, 2002. The response to this request for additional information is provided in Attachment 1.

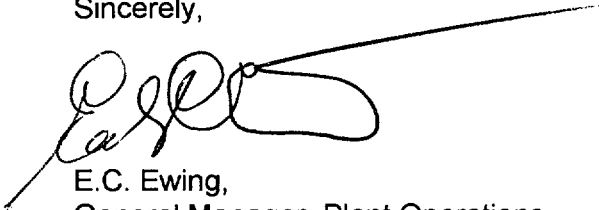
There are no technical changes proposed. The original no significant hazards consideration included in reference 1 is not affected by any information contained in the supplemental letter. This submittal contains one new commitment as summarized in Attachment 2.

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If you have any questions or require additional information, please contact D. Bryan Miller at 504-739-6692.

I declare under penalty of perjury that the foregoing is true and correct. Executed on February 27, 2002.

Sincerely,

A handwritten signature in black ink, appearing to be 'E.C. Ewing', with a long horizontal line extending from the end of the signature.

E.C. Ewing,
General Manager, Plant Operations
Waterford 3

ECE/DBM/cbh

Attachments:

1. Response to Request For Additional Information
2. List of Regulatory Commitments

cc: E.W. Merschoff, NRC Region IV
N. Kalyanam, NRC-NRR
J. Smith
N.S. Reynolds
NRC Resident Inspectors Office
Louisiana DEQ/Surveillance Division
American Nuclear Insurers

Attachment 1

To

W3F1-2002-0018

Response to Request for Additional Information

Response to Request for Additional Information Regarding Realignment of Refueling Water Storage Pool (RWSP) Boundary Isolation Valves to RWSP Purification System

Question 1:

Page 4 of 17, Attachment 1 - please explain what is meant by, "...stationing a dedicated operator in the vicinity of the isolation valves who is in communication with the control room and available to secure the system lineup." Specifically, where is this operator located in relation to the valves? Per figure 6.2-35, how far are valves FS423 and FS404 from one another? In the walkdown and American National Standards Institute (ANSI) 58.8 calculation, did the times specified (i.e., 11 minutes and 54 minutes, respectively) include securing both valves?

Response 1:

As noted in the original submittal, the current compensatory actions only require a dedicated operator when RWSP level is below 84.5%. The dedicated operator, when required, is located on the same level and in the same work area as the valve operators for FS-423 and FS-404. More specifically, the operator is located on the -4 level in the Reactor Auxiliary Building wing area (i.e., RB-4 pipe penetration area). It is important to clarify that the dedicated operator described on page 4 of 17 of Attachment 1, of the original submittal, is for the compensatory actions that are currently in place pending approval of this request. Following approval of this request, a dedicated operator will not be used for this purpose. Closure of these valves will be performed by a remote operator per plant procedures as outlined in the operator response time calculation on page 10 of 17 of Attachment 1, of the original submittal.

Approximately 20 feet separates valve FS-423 from valve FS-404 which are located in the same hallway.

The walkdown time specified (11 minutes) does include the time for securing both of the valves.

Note: The 11 minute time used in the original submittal was based on the Operator starting from the Nuclear Auxiliary Operator's (NAO's) office (located outside of the Controlled Access Area (i.e., not in the vicinity of the isolation valves)), securing FS-423, identifying the failure of FS-423 and subsequently securing the RWSP purification pump by opening its associated breaker at the motor control center. This sequence of operator actions was based on a preliminary operator response sequence that was changed prior to the original submittal requesting this Design Basis Change. The sequence of operator actions being proposed as part of this Design Basis Change was correctly described on page 10 of 17 of the original submittal. The 11 minute time used in the submittal is conservative because the time needed for the operator to walk to the circuit breaker, which is located two levels above and in a different work location from the valves, is longer than the time required to walk approximately 20 feet from one valve (FS-423) to the next (FS-404.)

Additional details of the 11 minute walkdown time are provided in the answer to Question 3 below. Details of the 54 minute time calculated per ANSI-58.8 are addressed in the answer to Question 2 below.

Question 2:

Page 10 of 17, Attachment 1 – ANSI 58.8 calculations. The calculated time of 54 minutes does not appear to take into consideration the “fixed sub-interval” time of 30 minutes that is specified by ANSI 58.8, “...If safety-related operator actions are performed outside of the control room, the fixed sub-interval shall be extended to 30 minutes to allow the operator sufficient time to make necessary preparations and to reach the location at which the action is to be performed.” Per paragraph 4.2 of ANSI 58.8 (1984) [1994], “...each safety-related and required operator action...” shall have a T_{operator} calculated for it (this includes a value for the fixed sub-interval). Please explain how the times associated with the various actions on page 10 of 17 were derived, with respect to ANSI 58.8 guidance.

Response 2:

The question referring to the “fixed sub-interval time of 30 minutes” is from the ANSI 58.8, 1994 Edition of the standard. The submittal was calculated using the 1984 Edition of the standard, which does not specifically require the fixed sub-interval to be extended by 30 minutes. It should be noted that even with the addition of 30 minutes to the submitted time of 54 minutes (84 minutes total), the time is still below the safety time limit of 100 minutes (Case 4), which is the most limiting scenario documented in the submittal.

The time provided in the submittal provided extra conservatism by assuming two failures (a valve and Operation personnel failure) when only one is required. The 1984 edition, in Time Test 2, requires a fixed time of 5 minutes, which is “required for each action under consideration for operator action time,” and 1 minute for “each discrete manipulation.” See the below table for time explanations.

Time Intervals	Action Times	Discussion
Time Test 1	20 minutes (fixed time)	Plant Condition 4 and 5 were selected due to the minimal frequency of occurrence.
Time Test 2	5 min.	Notify Remote Operator: Time it takes for the control room to notify the remote operator about isolation of the system. No preparation or tools are required for this task.
	5 min.	Remote Operator Access Valves: Travel time to the valves. (conservative)
	3 min.	Close FS-423: Only 1 min. is suggested by the ANSI 58.8 for this. (conservative). Assumed valve failed to close properly (Failure #1). With a failure, the future procedure will instruct the operator to close either valve FS-425 or FS-428 (pump discharge and suction valves)
	3 min.	Close FS-404: Only 1 min. is suggested by the ANSI 58.8 for this. (conservative)

Time Intervals	Action Times	Discussion
	5 min.	Operator injury, Contact the Control Room: In route to close the FS-425 or FS-428 the Operator has injury which prevents him from completing task (Failure #2) (conservative). This time is for the Operator to contact the control room to report the injury.
	5 min.	Control Room Notifies Second Operator: Time for the control room to notify a second operator to complete the assigned task.
	5 min.	Second Operator Access Valves FS-425 or FS-428: Travel time for the Operator to reach the valves.
	3 min.	Close Valve FS-425 or FS-428: Only 1 min. is suggested by the ANSI 58.8 for this. (conservative).
Safety Function Completion Time	54 minutes	
Safety Margin	$100 - 54 = 46$ minutes	The most limiting condition of the submittal is Case 4 at 100 minutes. Subtracting the safety function completion time of 54 minutes provides a margin of 46 minutes

As stated above, the original submittal used ANSI 58.8, 1984 Edition to determine the time required for operator action. The below table uses the ANSI 58.8, 1994 Edition without the extra conservatisms, described above, which were voluntarily included in the ANSI 58.8, 1984 Edition required operator response time determination. The information below is provided only for comparison between the 1984 and 1994 Editions of the standard and is submitted at the request of the NRC reviewer. The submittal utilizing the 1984 Edition of the standard is considered to constitute the licensing basis for this change.

Time Intervals	Action Times	Discussion
TI(diagnosis)	20 minutes (fixed time)	Plant Condition 4 and 5 were selected due to the minimal frequency of occurrence.
TI(dead)	00	This is defined as time where operator action is permitted but none is taken. This does not apply.
TI(operator)	30+2 minutes	This includes a fixed time of 30 minutes and 1 minute each variable sub-interval to close FS-423 and FS-404. FS-423 fails to close (single failure).
	5+1	The action includes a 5 minute fixed time to travel to FS-428 and 1 minute for the manipulation of the valve.
TI(process)	00	This time is considered to be zero.
Safety Function Completion Time	58 minutes	
TI(safety)	100 – 58 = 42 minutes	The most limiting condition of the submittal is Case 4 at 100 minutes. Subtracting the safety function completion time of 58 minutes provides a margin of 42 minutes

Question 3:

Page 11 of 17, Attachment 1 - please describe how the "actual plant walkdown" was conducted, e.g., who participated in the walkdown – Were qualified remote operator(s) or training staff? How many times was the walkdown conducted and how many qualified operators participated? Were there any failures? Were both valves "isolated" in a total of 11 minutes as part of the walkdown? What is involved with actually isolating the valves, i.e., are any tools required, ladders for access, chains to be removed/manipulated, etc? Was the walkdown accomplished by personnel with prior knowledge of what they were being asked to accomplish or were they "naïve" to the scenario?

Response 3:

The plant walkdown was conducted by a single Shift Manager (Senior Reactor Operator Licensed).

It was performed one time.

Since the 11 minute time was developed based on the single walkdown, there were no walkdown failures. During the walkdown however, it was assumed that FS-423 failed to close and that flow was secured by stopping the RWSP purification pump by opening its associated breaker at the Motor Control Center.

These actions took approximately 11 minutes, which is considered conservative since the time needed for the operator to walk to the circuit breaker located two levels above and in

a different work location from the valves, is longer than the time required to walk from one valve to the next. All actions were simulated at the location of the component.

No special tools or actions are required to manipulate the valve operators and close the valves. The valve operators are within reach and require no special effort to manipulate.

The Shift Manager had prior knowledge of the task to be accomplished; however, no pre-walkdown was performed to familiarize the Shift Manager with the location of the components to be manipulated. The Shift Manager relied on memory to locate all components for the walkdown.

During a January 22, 2002 telephone call, the NRC staff requested that the procedure, being developed to implement this change once approved, be validated to ensure the operator actions specified can be accomplished within the time (54 minutes) documented in the submittal. This validation will be completed by the implementation of the requested change. This was requested because only one Shift Manager without an actual procedure conducted a single walkdown.

Following the January 22, 2002 telephone call, two NAOs (non-licensed operator) performed walkdowns. They were instructed to record their travel times to and between the valves starting from their office located outside of the Controlled Access Area but inside the Protected Area. No actual valve manipulations were performed during these additional walkdowns. Using the recorded travel times and assuming one minute for each valve manipulation the walkdown times were 4 minutes, 52 seconds and 4 minutes, 35 seconds. These times represent travel from the NAO office to FS-404, closure of FS-404, travel to FS-423, attempted closure of FS-423 (assumed failure), travel to FS-428, and closure of FS-428.

Attachment 2

To

W3F1-2002-0018

List of Regulatory Commitments

List of Regulatory Commitments

The following table identifies those actions committed to by Entergy in this document. Any other statements in this submittal are provided for information purposes and are not considered to be regulatory commitments.

COMMITMENT	TYPE (Check one)		SCHEDULED COMPLETION DATE (If Required)
	ONE- TIME ACTION	CONTINUING COMPLIANCE	
During a January 22, 2002 telephone call, the NRC staff requested that the procedure, being developed to implement this change once approved, be validated to ensure the operator actions specified can be accomplished within the time (54 minutes) documented in the submittal. This validation will be completed by the implementation of the requested change.	X		Implementation