Entergy

Entergy Operations, Inc.
P.O. Box B
Killona, LA 70066
Tel 504 739 6242

Early C. Ewing, III
Director
Nuclear Safety & Regulatory Affairs
Waterford 3

W3F1-98-0174
A4.05
PR

October 22, 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
Response to Request for Additional Information
Technical Specification Change Request NPF-38-174

Gentlemen:

Waterford 3 originally provided Technical Specification Change Request (TSCR) NPF-38-174 by Letter W3F1-96-0004 on July 17, 1996. This request constituted a lead plant submittal, proposed by Waterford 3 on behalf of the Combustion Engineering Owners Group. CE NPSD-951, "Reactor Trip Circuit Breakers Surveillance Frequency Extension," was submitted to the Staff for review. The Staff requested additional information by Letter dated September 8, 1998. Attachment 1 of this letter provides responses to the Staff's questions.

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

Very truly yours,

E.C. Ewing
Director
Nuclear Safety & Regulatory Affairs

ECE/CWT/rtk
Attachment: NRC Staff Questions and Responses

A001

cc: E.W. Merschoff, NRC Region IV
C.P. Patel, NRC-NRR
J. Smith
N.S. Reynolds
NRC Resident Inspectors Office
Administrator Radiation Protection Division
(State of Louisiana)
American Nuclear Insurers

Attachment 1
To W3F1-98-0174
NRC Staff Questions and Responses

1. **Question:** The Waterford 3 description of the proposed changes indicates that each Reactor Trip Circuit Breaker (RTCB) is tested (open and closed) at least 57 times during a refueling cycle (3 during shutdown, 18 monthly, and 36 quarterly). Appendix A of the Topical Report identified only 39 tests on each RTCB (3 during shutdown, 18 monthly and 18 quarterly). Explain why the quarterly tests are different in these two documents.

   Response: The CEOG report reflects the minimum number of tests, whereas, the Waterford 3 TSCR uses the minimum number of expected breaker cycles. This difference is due to each actuation test cycling 2 breakers at a time in the actual testing. Thus, in actual practice the value of 18 tests used in the Topical Report is a conservative value rather than the actual value of 36 breaker cycles.

2. **Question:** Appendix A of the Topical Report states that the unreliability of the RTCBs at CE units is 0.6E-4 per demand. Explain the methodology used to arrive at this unreliability value.

   Response: As stated in the Topical Report, there are 92 RTCBs considered with 39 tests per RTCB with one failure from Table A-3. The period of time used for a refueling cycle is 20 months (18 months plus a 2 month outage). The time period considered for the failure rate was given in the report as 90 months. The value is calculated as follows:

   [1 failure]/[(92 breakers)(39 tests per breaker/20 months)(90 months)] =

   [1 failure]/[16146 tests] = 0.62 E-4 failures per test

   If the value of 36 quarterly tests per the Waterford 3 TSCR is used, the calculated failure rate would be 0.4 E-4. Thus, the report value has a conservative safety factor of 1.5.

3. **Question:** For one inoperable RTCB channel, the Combustion Engineering Plants Standard Technical Specifications (NUREG-1432) limiting condition for operation (LCO) action requires opening the affected RTCB in one hour but a note applicable to this action allows the inoperable RTCB to remain closed for up to an additional hour for performance of an RPS channel functional test (initiation logic, other RTCBs, and manual trip channels). However, the CEOG Topical Report and the Waterford 3 submittal recommend extending the closure time of an inoperable RTCB, to permit testing of other RTCBs, from one hour to two

hours. Waterford 3 also proposed extending the LCO action completion time to two hours. Clarify the inconsistency between the two documents and provide additional justification for the proposed extension.

Response: With a RTCB open or racked out, and one trip leg open, testing of the other RTCBs runs an increased risk of causing a spurious reactor trip. To meet Surveillance Requirements, testing of the other RTCBs must be performed on schedule. At newer CE plants (including Waterford), the Technical Specifications allow an inoperable RTCB to be closed for up to 1 hour to permit such testing to be performed with less risk of a spurious trip. It is not often that a plant must invoke this AOT, but when it is needed, 1 hour is insufficient time to test the two RTCBs in each of the other trip legs without rushing the work. It is the extension of this 1 hour AOT that is discussed in CE-NPSD-951.

Section 2.6 of CE-NPSD-951 clearly states that its recommendations concerning the allowable closure time of an inoperable RTCB apply to the notes for Conditions B and C in NUREG-1432, LCO 3.3.4 (Digital). In effect, an inconsistency does not exist between the two documents.

As stated in the Topical Report, the proposed extension from the 1 hour allowed outage time of NUREG-0212 and NUREG-1432 is based on NUREG-1366, "Improvements to Technical Specifications Surveillance Requirements." NUREG-1366 states in Section 5.5 "The reason for trips (during testing) is human error while conducting the testing. In order to reduce this error rate, the NRC staff recommends that the allowed outage time for one channel be increased to allow personnel to do the testing without being rushed." It is the recommendation of the report that "Licensees should pursue implementing an increase in the allowed outage time for testing reactor trip and bypass breakers as addressed in the vendor topical reports for extending surveillance intervals."

There are 13 reported failures of a RTCB to open found in Tables A-2 and A-3 of CE-NPSD-951. Of these, only one was a total failure of the breaker to open on demand. The time period of the report (1/1/86 through mid-1993) represents 90 months for 13 units. This represents approximately 842,400 hours (90 months x 30 days per month x 24 hours per day x 13 units). Thus, the change from a 1 hour allowed outage time to two hours represents a change of 13 hours per 842,400 hours to 26 hours per 842,400 hours. A failure rate of 0.6 E-4 per demand has been experienced at CE designed plants. The CE designed reactor trip system provides redundant and diverse trip actuation through the use of both shunt and undervoltage trip devices on both automatic and manual reactor trips. Operation of the undervoltage trip device using 125 volt DC control power effectively ensures that the reactor will be tripped on loss of offsite or onsite power. As there are at least 2 independent DC busses (4 in some cases) in CE plants, there is no single failure that will prevent the RTCBs from being actuated. Either the affected undervoltage devices will trip, or the remaining shunt trip

devices will remain operable. The diverse scram system installed per 10 CFR 50.62 as Automatic Trip Without Scram (ATWS) protection provides additional assurance that an automatic trip will occur when required.