

November 1, 2007

Mr. Gordon Bischoff, Manager
Owners Group Program Management Office
Westinghouse Electric Company
P.O. Box 355
Pittsburgh, PA 15230-0355

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION RE: PRESSURIZED WATER
REACTOR OWNERS GROUP (PWROG) TOPICAL REPORT (TR)
WCAP-15830, REV. 1, "STAGGERED INTEGRATED ESF [ENGINEERED
SAFETY FEATURE] TESTING" (TAC NO. MD6206)

Dear Mr. Gresham:

By letter dated July 27, 2007 (Agencywide Documents Access and Management System Accession No. ML072120207), the PWROG submitted WCAP-15830, Rev. 1, "Staggered Integrated ESF Testing," for U.S. Nuclear Regulatory Commission (NRC) staff review. Upon review of the information provided, the NRC staff has determined that additional information is needed to complete the review. To support the expedited review schedule, Christine DiMuzio and I agreed on October 29, 2007, that the NRC staff will receive your response to the enclosed Request for Additional Information (RAI) questions within 30 days from the issuance date of the formal RAI. If you have any questions regarding the enclosed RAI questions, please contact me at 301-415-3610.

Sincerely,

/RA/

Tanya M. Mensah, Senior Project Manager
Special Projects Branch
Division of Policy and Rulemaking
Office of Nuclear Reactor Regulation

Project No. 694

Enclosure: RAI questions

cc w/encl: See next page

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ADAMS ACCESSION NO.: ML073030508

***No major changes to RAI input NRR-106**

OFFICE	PSPB/PM	PSPB/LA	EEEE/BC*	PSPB/BC
NAME	TMensah	DBaxley	GWilson	SRosenberg
DATE	11/01/07	10/31/07	10/24/07	11/ 01 /07

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PWR Owners Group

Project No. 694

cc:

Mr. James A. Gresham, Manager
Regulatory Compliance and Plant Licensing
Westinghouse Electric Company
P.O. Box 355
Pittsburgh, PA 15230-0355
greshaja@westinghouse.com

05/12/06

REQUEST FOR ADDITIONAL INFORMATION

BY THE OFFICE OF NUCLEAR REACTOR REGULATION

TOPICAL REPORT (TR) WCAP-15830, REV. 1, "STAGGERED
INTEGRATED ESF [ENGINEERED SAFETY FEATURE] TESTING"

PRESSURIZED WATER REACTOR OWNERS GROUP (PWROG)

PROJECT NO. 694

- 1) TR WCAP-15830, Rev. 1, references the Institute of Electrical and Electronics Engineers (IEEE) Standard 387-1995, "IEEE Standard Criteria for Diesel-Generator Units Applied as Standby Power Supplies for Nuclear Power Generating Stations," Regulatory Guide (RG) 1.9, Revision 3, "Selection, Design, Qualification and Testing of Emergency Diesel Generator Units as Class 1E Onsite Electric Power Systems at Nuclear Power Plants," and RG 1.108, "Periodic Testing of Emergency Diesel Generator Units Used as Class 1E Onsite Electric Power Systems at Nuclear Power Plants." All of these documents specify performing the integrated ESF/loss-of-offsite power (LOOP) test each refueling outage.

Please justify why deviation from the aforementioned industry standard and regulatory guidance documents is acceptable.

- 2) The proposed methodology suggests that reliance on the requirements of the maintenance rule will satisfy the monitoring requirements. Table 7.1-1 of the proposed methodology indicated that a total of 38 significant (Group I and II) failures occurred at the 6 demonstration units over the past 24 integrated ESF/LOOP tests.
 - a) Please clarify how using the Maintenance Rule, as the required performance monitoring program, meets the intent of RG 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis," and RG 1.177, "An Approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications" (i.e., demonstrating how the referenced past integrated ESF/LOOP test failures have been satisfactorily handled).
 - b) If applicable, describe the acceptance criteria that would require return to a sequential integrated ESFAS/LOOP test each refueling cycle.
- 3) Please describe the problem with cycling components during the integrated ESF/LOOP testing.
- 4) In the proposed methodology, Westinghouse Electric Company (Westinghouse) stated that no time dependent failure mechanisms have been found in the components tested by the Integrated ESF/LOOP test. The proposed methodology assumes that the standby failure rate remains constant such that doubling the time between tests will

ENCLOSURE

double the standby failures. In the January 10, 2007, meeting between Westinghouse and the NRC staff (Agencywide Documents Access and Management System Accession No. ML070170036), Westinghouse representatives stated that the failure rate would remain constant for 24 months, increase by a factor of 2 between 24 and 30 months and increase by a factor of 6 between 30 and 36 months. As further emphasized in Appendix B of TR WCAP-15830, Rev. 1, please confirm that the proposed methodology will require similar treatment for extending the standby failure rate between 18 and 36 months.

- 5) The methodology does not address some of the more common examples of time dependent failures. These examples include, but are not limited to:
- Relay coil insulation degradation caused by normally energized relays.
 - Normally open contact degradation (increasing contact resistance caused by oxidation or contamination).
 - Relaxation of spring tension.

Please justify why these failure modes were not considered time dependent failure mechanisms.

- 6) Non safety-related circuit breakers connected to the safety-related bus failing to open have the same potential consequence as loss of a diesel generator itself.
- a) Clarify why the methodology addresses the following circuit breakers differently:
- Non safety-related loads.
 - Offsite power supply breakers.
 - Bus tie breakers.
- b) Describe how circuit breaker lockout (such as caused by an energized 86 or 52y device) is treated in the Failure Mode Effects Analysis.
- c) Confirm that each licensee proposing to adopt this methodology must perform a component specific (e.g., circuit breaker) industry experience search and factor the results into the plant-specific analysis. The search must address different failure mode industry experience for the licensee's specific circuit breaker manufacturer and circuit breaker types.
- 7) Failure modes for two-out-of-three circuits were not considered in the methodology other than as random failures with no consequence. The potential exists that the additional eighteen months between tests could introduce common mode failures previously not seen. Please describe why these failures were not addressed as common mode failures.
- 8) Please discuss the potential for partial loss of redundancy for the ESF/LOOP actuation for an additional 18 months caused by the proposed staggered testing frequency.
- 9) Provide assurance that the refueling interval functional testing of the sequencers includes the actuation of the output relays.

- 10) Identify and describe all tests of the governor change-over from droop to isochronous other than during the integrated ESF/LOOP test.
- 11) In Section 8.0 of TR WCAP-15830, Rev. 1, Westinghouse concludes that the proposed methodology is acceptable from a risk perspective. Consistent with RG 1.174 and RG 1.177, the risk-informed process includes both a risk and a deterministic component. Please describe why the proposed methodology is acceptable from a deterministic perspective.
- 12) In Section 5.3 of TR WCAP-15830, Rev.1, Westinghouse states that each licensee must initiate a maintenance program to remove all time dependent failure modes. Please describe the basic contents of the proposed maintenance program and whether it will include a detailed time-dependent failure modes and effects analysis to identify components that must be tested periodically in addition to staggered testing.