July 22, 2003

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 REGARDING WCAP-15622, REVISION 0, "RISK INFORMED EVALUATION OF EXTENSIONS TO AC ELECTRICAL POWER SYSTEM COMPLETION TIMES" (TAC NO. MB2257)

Dear Mr. Bischoff:

By letter dated June 15, 2001, the Westinghouse Owners Group submitted for NRC staff review Topical Report WCAP-15622, Revision 0, "Risk Informed Evaluation of Extensions to AC Electrical Power System Completion Times." The staff has completed its preliminary review of WCAP-15622, Revision 0 and has identified a number of items for which additional information is needed to continue its review. The staff recently discussed this request for additional information (RAI) with Mr. Ken Vavrek of your staff, and it was agreed that a response would be provided within 60 days of receipt of this letter.

If you have any questions, please call me at (301) 415-1436.

Sincerely,

/RA/

Drew Holland, Project Manager, Section 2
Project Directorate IV
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Project No. 694

Enclosure: Request for Additional Information

cc w/encl:
Mr. H. A. Sepp, Manager
Regulatory and Licensing Engineering
Westinghouse Electric Company
P.O. Box 355
Pittsburgh, PA 15230-0355

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REQUEST FOR ADDITIONAL INFORMATION

WCAP-15622, REVISION 0, "RISK INFORMED EVALUATION OF EXTENSIONS TO AC ELECTRICAL POWER SYSTEM COMPLETION TIMES"

WESTINGHOUSE OWNERS GROUP

PROJECT NO. 694

These questions are related to the request for additional information (RAI) responses from the Westinghouse Owners Group (WOG) dated November 27, 2002.

1. Discuss the impact of the staff's safety evaluation of Topical Report WCAP-15603, Revision 1, "WOG 2000 Reactor Coolant Pump Seal Leakage Model for Westinghouse PWRS," on WCAP-15622 analysis and RAI responses.

2. a. Are emergency diesel generator (EDG) surveillance or completion times (CTs) restricted by time of year based on severe weather and temperature? Are grid stability, switchyard or other factors considered? Are there contingency plans for restoring an inoperable EDG in the event of unanticipated adverse weather, degraded grid, or other factors?

   b. Are loss-of-offsite power (LOOP) events considered random events over time or do LOOP event frequencies vary with time of year? With a decrease in LOOP event frequencies, have LOOP durations and recovery times remain bounded by probabilistic risk assessment (PRA) assumptions?

   c. The Callaway results indicate a LOOP initiating event frequency of 1.5E-2/year. The new value is significantly lower for Callaway. Provide a comparison of assumptions/methods between the base case value and the new maintenance activities LOOP value.

   d. Comanche Peak

      (1) Are "repair type activities" considered unscheduled repairs? For repairs not related to EDG scheduled tests, are the repair CTs limited to 72 hours?

      (2) An improvement in LOOP event frequency is noted. Provide a discussion on assumptions/methods used. Are the recovery times of the industry data consistent with the assumptions in the Comanche Peak PRA?

      (3) The individual plant examination (IPE) review noted that the use of generic data was a weakness for Comanche Peak. Operator recovery and repair of failed systems was assumed and offsite power non-recovery factors were considered low by a factor of 2 to 5. Common cause factors were also considered low. Discuss these issues and their impact on the results shown in Table RAI-8-2 that shows the incremental

conditional core damage probability (ICCDP) for EDG A (in repair) and EDG B (in repair) to be greater than Regulatory Guide (RG) 1.177, "An Approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications," guidelines. In addition the IPE found that the tornado PRA credited operator recovery actions in restoring offsite power; yet, there was no discussion in the submittal to assure that the applicability and practicality of such recovery actions were considered. Provide a justification for credited actions during/following external events (e.g., tornadoes, fires, seismic events).

e. McGuire

(1) The McGuire LOOP frequency was updated with industry data. Based on the LOOP events included in the Electric Power Research Institute (EPRI) data and the LOOP events experienced at McGuire, are the recovery times and durations of the industry data consistent with the assumptions in the McGuire PRA?

(2) EPRI Document TR-106306, "Losses of Off-Site Power at U.S. Nuclear Power Plants - Through 1995," stated that there were three McGuire LOOP events during the period covered by the EPRI report (1980-1995). The data given by EPRI report 1000157, "Losses of Offsite Power at U.S. Nuclear Power Plants - Through 1999," states that there were 37 LOOP events for the period covered by the report (1988 - 1999) with 2 events for McGuire. WCAP-75622, Revision 0, stated that there were three LOOP events at McGuire for the period evaluated, while the RAI response stated that there were two LOOP events for the time period covered. Were all events accounted for in the McGuire revised estimate of LOOP frequency?

(3) Of the 37 LOOP events noted how many were related to weather, maintenance, equipment, or operator?

(4) The reactor coolant pump (RCP) seal model is stated to be based on WCAP-15603. Provide a discussion on the use of this model and the impact the staff's safety evaluation dated May 20, 2003, has on the analysis results for extended EDG CTs.

(5) Confirm the ICCDP value of 4.38E-07 (EDG in repair) for Table RAI 8-3.

3. Discuss external event initiators and their impact on the proposed extended EDG completion times (fire, seismic, high winds, flood and other external events).

4. Scheduled testing of the EDG occurs on a 30-day test frequency. This 30-day EDG test frequency cannot always be maintained together with the compensatory measure: testing will not be performed when severe weather is forecasted. Provide additional justification for not meeting the guidelines 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 for the proposed seven-day CT for unplanned maintenance or provide additional compensatory measures so that the guidelines of RG 1.174 and RG 1.177 are met for unplanned maintenance.

5. Utilization of an alternate power supply to the vital alternating current (ac) bus (which does not have a station battery available as the uninterruptible power supply) is governed by Improved Standard Technical Specification (ISTS) 3.8.7, Inverters - Operating. A CT of 24 hours is currently allowed by ISTS 3.8.7 to return one inoperable inverter to operable status. An operable inverter, in part, requires the associated vital bus to be powered by the inverter with output voltage and frequency within tolerance and power input to the inverter available from its associated direct current (dc) station battery. Similarly, operability (i.e., compliance with design basis requirements) of the vital ac bus requires, in part, that the bus be powered by an operable inverter. WCAP-15622, Revision 0, however, states that the vital ac bus is typically returned to operable status by re-energizing the bus from its alternate power source. Provide clarification.

6. The response to RAI 11 and EP [electrical power] RAI 3 includes the following statement: "...Following the EDG at-power maintenance activity, a test will be completed to demonstrate operability of the EDG. This test is typically the monthly EDG test required in plant Technical Specifications. This monthly test is designed to be performed with the plant at-power and demonstrates EDG operability."

   a. Availability of the EDG following additional at-power preventive maintenance activities – The EDG monthly test provides some level of assurance "X" that the EDG (following additional preplanned preventive maintenance at power) is operable, i.e., the EDG meets its design basis requirements and is capable of performing its design function when needed. This level of assurance "X" can be less then the level of assurance "Y" that existed before the additional preplanned preventive maintenance was performed and can be less then the level of assurance "Z" if (in addition to the EDG monthly test) additional testing is performed as recommended by the EDG manufacturer to demonstrate operability following the maintenance activity. Describe how this lower level of assurance "X" is addressed in the risk analysis and how plant risk is affected.

   b. EDG failure during post maintenance testing – Describe how failure to meet post maintenance test requirements is addressed as part of the proposed CT and how plant risk is affected by EDG failure following the maintenance activity.

   c. Describe how increased surveillance testing (increased operating time with the EDG parallel with the offsite power supply) is addressed as part of the risk analysis and how plant risk is affected.

7. In regard to the compensatory measure “electrical power cross connects,” describe the analysis and its results which demonstrates that the redundant safety related electrical systems remain independent and continue to have sufficient capacity and capability pursuant with the requirements of General Design Criterion 17 of 10 CFR Part 50, Appendix A, when electrical power cross connects are being utilized. In addition,

describe how reduced independence, capacity, and capability of electrical systems due to utilization of the cross connects is addressed in the risk analysis and how plant risk is affected.

8. LOOP initiating event (IE) frequency is calculated and utilized as part of the tier 1 risk evaluation. Describe how the existence of severe weather affects LOOP IE frequency. Describe the process through which LOOP IE frequency (as utilized as part of the risk evaluation) will be maintained.

9. How is the probability of LOOP used in the risk analysis maintained assuming severe weather conditions?