



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
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*Central File*

December 24, 1996

Mr. D. F. Pilmer  
Combustion Engineering Owners Group  
Southern California Edison Company  
MS E-50  
San Onofre Nuclear Generating Station  
P.O. Box 128  
San Clemente, CA 92672-0128

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION (RAI) RELATED TO THE  
COMBUSTION ENGINEERING OWNERS GROUP (CEOG) JOINT  
APPLICATION REPORT FOR EMERGENCY DIESEL GENERATORS

- Reference: (1) D. F. Pilmer (CEOG) to C. I. Grimes (NRC), "CEOG Response to Request For Additional Information (RAI) Related to the CEOG Joint Application Reports," Letter CEOG-96-254, dated June 14, 1996
- (2) F. R. Dacimo (Northeast Utilities) to NRC, "Transmittal of Additional Information Regarding Proposed Revision to Technical Specifications to Extend Allowed Outage Times for the Emergency Diesel Generator, Safety Injection Tanks, and Emergency Core Cooling Subsystem," Letter dated March 18, 1996.
- (3) Dwight C. Mims (Entergy) to NRC, "Response to NRC Questions on ANO-2 Application on Allowed Outage Time Extensions," Letter dated February 27, 1996.

Dear Mr. Pilmer:

The Nuclear Regulatory Commission's (NRC) staff requests additional information regarding the CEOG Joint Application Report for Emergency Diesel Generators (EDGs) Allowed Outage Time (AOT) Extension and its adoption in amendment requests from several licensees. You are requested to provide a response to these questions within 45 days of receipt of this letter. Two of the participating licensees, Millstone 2 and ANO-2, have already provided responses to questions 2 through 4 in references 2 and 3. Those licensees do not need to respond to questions 2 through 4 of this RAI.

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1. In your submittal of May 1995, CE NPSD-996, "Joint Applications Report for Emergency Diesel Generators AOT Extension," you proposed technical specification (TS) changes to existing requirements for the operation of the EDG subsystems. Specifically, you proposed to:
  - a. In general, extend the AOT for a single inoperable EDG from 72 hours (for most plants) to 7 days.
  - b. Provide a once per fuel cycle allowance for an AOT of 10 days for a single inoperable EDG.

It is the NRC staff's position that "once per cycle" AOTs are unnecessary and could prove cumbersome to implement. Therefore the staff requests that you revise your proposal to include only one AOT for a single inoperable EDG that will cover all situations when the associated limiting condition for operation is applicable. In addition, each of the participating licensees that has submitted a license amendment request to adopt the proposals contained in CE NPSD-996 should submit a revised request to be consistent with the revised proposal to be submitted by the CEOG.

2. For each participating licensee, please state your reason for requesting an extension of your current EDG AOT. Provide a list of typical preventive maintenance (PM) or corrective maintenance (CM) that can take over 72 hours to complete and explain how this task is accomplished within the current LCO. Include in your response the type of PM (which is required for your EDGs) that you intend to do during power operation and specify the time it takes to accomplish it. Your response should include instances where your current AOT was insufficient to perform preventive or corrective maintenance.
3. For each participating licensee, provide a discussion of the loss of offsite power events at your facility and include a quantitative discussion on how industry data on offsite power losses compares with your facility.
4. Because of the potential safety impact of the extended EDG AOT for PM, the staff believes that certain compensatory measures are needed during the extended EDG AOT to ensure safe operation of the plant. Provide a discussion for each participating licensee addressing each item listed below.
  - a. The TS should include verification that the required systems, subsystems, trains, components, and devices that depend on the remaining EDGs as a source of emergency power are operable before

removing an EDG for PM. In addition, positive measures should be provided to preclude subsequent testing or maintenance activities on these systems, subsystems, trains, components, and devices while the EDG is inoperable.

- b. For those plants that have an alternate AC (AAC) source, it may be appropriate to demonstrate, before taking an EDG out for an extended period, that the AAC source is functional by verifying that the power source is capable of being connected to the safety bus associated with the inoperable EDG, and verifying this capability of being connected to the safety bus periodically thereafter.
  - c. Voluntary entry into an LCO action statement should not be abused by repeated entry into and exit from the LCO.
  - d. Removal from service of safety systems and important non-safety equipment, including offsite power sources, should be minimized during the outage of the EDG for PM.
  - e. Voluntary entry into an LCO action statement should not be scheduled when adverse weather is expected.
5. If your plant is capable of cross-connecting the redundant engineered safety buses, explain how this is modeled in the PRA. How long does it take to establish the cross-tie? How much credit is taken?
6. If your plant has an AAC source, is it covered under your maintenance rule program? If not, why not? Is the AAC source hardened against severe weather? How much credit has been taken with respect to the AAC source's ability to decrease the conditional CDF?
7. Beginning with the station blackout induced core damage frequency (SBO/CDF) reported in the Individual Plant Examination (IPE) for each plant, identify and quantify SBO/CDF reduction (credit) taken in the revised probabilistic risk assessment (PRA) used to support CE NPSD-996 for the following:
- a. Alternate AC source availability
  - b. EDG Cross-Tie capability

Provide a revised SBO/CDF estimate based on the above. Describe and

quantify any other credit taken in addition to the three items listed above. Provide this as the second revised SBO/CDF estimate. (Note: please do not include the proposed extended EDG AOT in this revised baseline estimate.)

Include in the estimate an extended AOT (corresponding to your revised request) for each of the EDGs and quantify the increase in SBO/CDF. Report this as the final SBO/CDF estimate.

Provide the calculated total CDF resulting from all PRA sequences involving SBO before and after you met the SBO rule (10 CFR 50.63) implementation. Explain how the EDG preventive maintenance and subsequent on-line operability testing is treated in the CDF calculations.

Provide the EDG reliability and availability values used in the PRA analysis to calculate the SBO CDF values. Discuss these values in relationship to any goals associated with the implementation of the maintenance rule (10 CFR 50.65) and in comparison to actual past performance of the plant's EDGs. Also, compare the values used in the PRA analysis to the target values committed to for SBO.

8. Please describe the CEOG PRA cross-comparison process performed to validate the results provided in the EDG Joint Application Report. Describe the differences among the participating licensees in the results of the probabilistic analyses performed for the EDG AOT extensions. Describe the basis for the differences. Identify any modeling differences or differences in assumptions among the CE plants.
9. As described in the NRC staff's previous request for additional information, the staff has developed a "three-tiered" approach for reviewing risk-informed improvements to TS. Tier 1 involves setting an upper limit on AOTs based on  $\Delta$ CDF and containment performance. Tier 2 involves pre-determined restrictions on high-risk configurations by prohibiting simultaneous equipment outages. Tier 3 involves performance of a real-time assessment of the overall impact on the safety of proposed configurations prior to and during performing maintenance activities which will remove equipment from service.

With regard to Tier 2, given the plant configuration with one EDG inoperable, what other plant systems or components are risk-significant, as indicated by PRA? Given these other risk-significant systems or components, how would each licensee ensure that no risk-significant plant equipment outage configurations would occur while the plant is in the LCO proposed for

modification? Will the bases for this assurance be reflected in plant procedures or TS?

With regard to Tier 3, in reference 1 (Question 4), the CEOG stated that the group members will use one or more of the following tools: (1) PSA derived matrices or (2) a risk calculator. The staff requests clarification on this point from each of the participating licensees as it relates to the EDG submittal. Specifically, will the risk assessment be performed using the PRA model described in your response to Question 1 of reference 1? If not, what changes to the model have been made?

Also, please provide a copy of the approved configuration risk management program (CRMP) for each participating licensee used to implement Tier 3 as discussed in your response to Question 4 of reference 1. Explain how it will be maintained and referenced in the administrative control section of the plant TS and in the Bases for the EDG TS. Please ensure that your submittal includes the following with respect to your CRMP:

Describe how PRA insights are (or will be) used in the decision making process, specifically with respect to planning and controlling maintenance activities involving the EDGs. Also, describe training requirements for personnel that will use or report PRA results to upper management.

Discuss how configuration risk estimates for equipment configurations not modeled in PRA were addressed. Also discuss the software presently used or planned to be used to generate PRA insights, and how it will be maintained.

Discuss the extent to which numerical criteria will be used to proceed with an extended EDG AOT. Include any incremental conditional core damage probability estimates, or core damage frequency estimates used as decision criteria. Describe how uncertainties will be addressed in the decision making process, and the role these quantitative insights will play in the management approval process.

Please provide a detailed response to this question for each participating licensee.

10. Provide a discussion of the uncertainties in the PRA results presented in the EDG Joint Application Report.

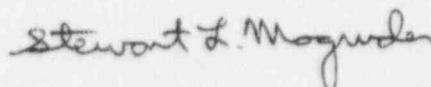


11. Provide a discussion of any sensitivity studies performed to support your findings for the EDGs. Include the bases for the studies and your understanding of the impact.
12. Provide the current reliability data and the major electrical component failure rates used in the PRA.
13. When an EDG is taken out of service, is it assumed that the whole engineered safety feature electrical power division is inoperable for the purpose of calculating the increase in the CDF? If not, why not?

These questions affect nine or fewer respondents, and therefore are not subjected to review by the Office of Management and Budget under P.L. 96-511.

If you have any questions regarding this matter, please contact Nanette Gilles at (301) 415-1180.

Sincerely,



Stewart L. Magruder, Jr., Project Manager  
Standardization Project Directorate  
Division of Reactor Program Management  
Office of Nuclear Reactor Regulation

cc: See next page

Project No. 692

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