

October 29, 2001

MEMORANDUM TO: Stuart A. Richards, Director
Project Directorate IV
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

FROM: Michael L. Scott, Project Manager, Section 2
Project Directorate IV */RA/*
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

SUBJECT: SUMMARY OF OCTOBER 3, 2001, MEETING WITH WESTINGHOUSE OWNERS GROUP ON WCAP-15622, "RISK-INFORMED EVALUATION OF EXTENSIONS TO AC ELECTRICAL POWER SYSTEM COMPLETION TIMES"

On October 3, 2001, the NRC staff met with representatives of the Westinghouse Owners Group (WOG) at the WOG's request. The subject of the meeting was WCAP-15622, "Risk-Informed Evaluation of Extensions to AC Electrical Power System Completion Times." The WOG's objectives for the meeting were to: (1) achieve a better understanding of the NRC staff's issues with WCAP-15622, (2) discuss the acceptability of possible shutdown risk avoidance arguments, (3) consider what compensatory actions would be necessary, and (4) gain a better understanding of what issues the NRC expects to address with an alternative power source. Attachment 1 contains a list of meeting attendees and Attachment 2 is a list of suggested talking points for the meeting prepared by the NRC staff prior to the meeting and handed out at the meeting. The WOG handed out one slide that stated the meeting objectives; this slide is available under ADAMS accession number ML012820366. They also handed out copies of pages 1.3-6 and 1.3-7 from NUREG-1431, Revision 2, "Standard Technical Specifications, Westinghouse Plants," which are available under ADAMS accession number ML011840211.

The WOG discussed each of the NRC's talking points, as summarized below with a statement/synopsis of each talking point followed by a summary of the discussion at the meeting for that talking point.

- Review technical specification (TS) markups. The WOG noted that the standard TS completion time was based on 10 days from failure discovery, and it is the sum of 3 days without offsite power source and 7 days completion time. The staff noted that they would expect a risk argument for this case. The WOG responded that times in the topical report (TR) are purely deterministic. The staff replied that they were concerned about this being a sufficient basis for a staff finding of acceptability. They added that present values of core damage frequency (CDF) and Incremental Conditional Core Damage Probability (ICCDP) are higher than they would like to see. The staff noted that

the request for additional information (RAI) to be prepared by the staff will address the issue from a risk standpoint, and that the staff will not just accept a precedent argument.

- Discuss licensees' probabilistic risk assessment (PRA) applicability to the proposed allowed outage time (AOT) extensions. The staff questioned how plant submittals would be done. The WOG responded that plants will use the methods in the TR and will compare their results with those listed in the TR for other plants. The staff noted that Tier 1 risk analysis will need to be looked at in future submittals, along with Tiers 2 and 3. The WOG agreed.
- Discuss licensees' PRA quality, including peer reviews and quality control processes. The staff asked where PRA quality will be addressed. The WOG responded that quality is not discussed in the TR. The staff stated that the TR should indicate this discussion will be required for site-specific submittals to meet regulatory guide (RG) requirements.
- Provide emergency diesel generator (EDG) reliability and availability evaluation, plant-specific and generic. The staff stated that plant-specific submittals should provide diesel reliability information and that the TR should state this or should itself provide the information. The WOG replied that they would try to provide this information in the RAI response.
- Discuss applicability of Information Notice (IN) 97-21, "Availability of Alternate AC Power Source Designed for Station Blackout Event" for those plants taking credit for alternate power source. The WOG noted that utilities could address this IN when they submit license amendment requests, or it could be in the implementation guideline.
- Discuss effect of external events on proposed AOTs. The staff stated that such events need to be discussed in the TR. The WOG replied that this information was sought in the data request. The staff stated that it will also need to be addressed in the plant-specific submittals, especially with regard to alternate AC sources.
- Include large early release frequency (LERF) calculations and discussion. The staff noted that all other requests for EDG extensions included LERF and asked why this TR did not do so. The WOG questioned the impact of LERF on the staff's decision process, which the WOG stated would focus on CDF. The WOG asserted that the probability of an initiating event for LERF coincident with an EDG failure is very small. The staff responded that they do not have a specified algorithm for LERF, and that LERF is an important consideration. It needs to be addressed. If the WOG believes it is not important, the WOG needs to demonstrate that. The staff stated that either a qualitative or bounding quantitative argument may be attempted.
- Discuss credit given to loss of coolant accident (LOCA) seal model. The staff noted that some plants have referenced the WOG 2000 seal model TR, and that staff questions on this model also apply to the Brookhaven model used by other plants. The staff emphasized that the Rhodes model is the only approved licensing model. If these questions result in a model change, results in WCAP-15622 could be impacted. The staff noted that it would be helpful to show that the results are not sensitive to variations in models, and that the RAI will ask for a qualitative analysis to show the application is

acceptable if a submittal uses anything other than the Rhodes model. They added they were not sure this issue could be solved generically. Finally, the staff stated that, since the WOG 2000 model is currently under staff review, the staff could make acceptance of this TR subject to acceptance of the WOG 2000 TR.

The WOG asked when to expect the RAI. The staff replied that it should be developed within a few weeks, but that the staff will also be working on the response to WCAP-15376, "Risk-Informed RTS and ESFAS Surveillance Test Intervals," which may be of higher priority to the WOG. The WOG agreed that WCAP-15376 is probably a higher priority.

The staff recommended that the WOG consider running the Rhodes model in the TR or that it wait for approval of the WOG 2000 model and then use that. The staff noted that it has not accepted seal models other than the Rhodes model.

- Discuss results in Tables 8-1, 8-5, and 8-6 delta CDF and ICCDP. The staff stated that they have concerns with the differences in the delta CDF and ICCDP in these tables in the TR as compared to the guidelines in RGs 1.177 and 1.174. The WOG noted that guidelines are just that, and that licensees will actually use less time than assumed in the analysis. The staff responded that the proposed completion times should be in the CDP calculations. If the guidelines are exceeded, compensatory measures can be used, or the utility can wait until the plant is in a different state. The staff added that some of the values in the tables are almost an order of magnitude above the guidelines. The staff stated that, based on what has been approved in the last three years, the staff is not likely to accept numbers that high. The WOG needs to state why it is acceptable to be over the guideline but would need to defer plant-specific issues to plant-specific submittals. The WOG asked whether the numbers in Table 8-6 are acceptable. The staff replied that this table was a "mixed bag." They added that there might be justification for numbers above the guidelines. Also, the staff could consider different extensions for different plants. The staff also noted that the TR appears to confuse "alternate" power supply with "operable."
- Combined effects are not evaluated per the guidance of RG 1.177. The staff noted that the TR does not consider cumulative effects, as called for in the RGs. The WOG replied that compensatory measures need to be addressed rather than just adding the numbers. The staff replied that the applicant can take credit for such measures.
- Describe compensatory measures before and during extended EDG maintenance, including documentation of these measures. The WOG stated that some utilities have considered installation of alternate AC power sources but have found this option unacceptable from an economic perspective. They added that sequences that dominate the PRA would be evaluated and an attempt made to reduce the risk (e.g., alternate seal cooling, temporary diesels). A lot of that is already being done under A.4 of the Maintenance Rule. The staff noted that plants with additional AC sources have been granted AOT extensions. They added that it would be good to examine the effect of possible compensatory measures.

- Discuss effects of additional testing at power on plant risk and discuss tradeoff between power risk and shutdown risk (last two items on Attachment 2). The staff asked whether the WOG has considered whether there are certain conditions/practices or requirements when performing a new maintenance activity at power. They stated that it is hard to quantify risk swaps between shutdown and power operation, and that the staff does not want to give a benefit for maintenance planning that schedules activities during more risk-significant periods of plant operation or shutdown. The WOG responded that most outages are planned with risk in mind. They also noted that utilities without shutdown risk models would need to pursue risk swaps qualitatively. The staff replied that it might be easier to use qualitative arguments when just over the guidelines than when significantly over the guidelines.

Project No. 694

Attachments: 1. Meeting Attendees
2. List of Talking Points for October 3, 2001, Meeting

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Project No.694

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MEETING WITH WESTINGHOUSE OWNERS GROUP

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

OCTOBER 3, 2001

ATTENDANCE LIST

WESTINGHOUSE OWNERS GROUP

J. Andrechek (Westinghouse))
G. Eckholt (Nuclear Management Corp./WOG)
J. Andre (Westinghouse)
M. Kitlan (Duke Energy/WOG)
J. Riste (Nuclear Management Corp.)

NRC

C. Douth
M. Wohl
C. Schulten
J. Knox
S. Dembek
D. Harrison
M. Rubin
M. Scott

Talking Points for October 3, 2001, Meeting
WCAP-15622,
"Risk-Informed Evaluation of Extensions to AC Electrical Power System Completion Times"

- Review TS mark-ups. For example LCO 3.8.9 Actions A, B and C. Insert 1, insert 4, insert 6 and insert 8.
- Discuss licensees PRA applicability to the proposed AOT extensions and the results and insights noted for the requested AOTs.
- Discuss licensees PRA quality including peer reviews and quality control processes - including design control.
- Provide Emergency Diesel Generator reliability and availability evaluation - plant specific data and generic data.
- Applicability of Information Notice 97-21, "Availability of Alternate AC Power Source Designed for Station Blackout Event" for those plants taking credit for an Alternate AC source.
- The effect of external events on the proposed AOTs - SBO diesels for example.
- Include LERF calculations/discussion
- Discuss credit given to LOCA seal model - Rhodes model not used.
- Provide discussion with regards to the results shown for Table 8-1, Table 8-5 and Table 8-6 Delta CDF and ICCDP with respect to RG 1.177 and 1.174 guidelines. Numerous results show substantial differences from RG 1.177 and 1.174 guidelines.
- For the proposed multiple TS changes the combined effects are not evaluated per the guidance of RG 1.177. Provide a discussion on the cumulative effects of the proposed changes.
- Describe compensatory measures to be taken (or guidance) before and during extended diesel generator maintenance and how these measures will be documented.
- Discuss the effects of additional testing at power on plant risk due to additional maintenance, inspection, and overhaul at power (improper maintenance/error and additional test required normally performed at shutdown).
- Discuss shutdown risk/transitional risk including the proposed trade off of at power risk/shutdown risk. Include methodology used to compare at power with shutdown risk results. Provide a discussion on the generic applicability of the conclusions of WCAP-15622 to plants without shutdown risk models.