

August 20, 2001

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

FROM: Jack Cushing, Project Manager, Section 2  
Project Directorate IV */RA/*  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

SUBJECT: SUMMARY OF MEETING HELD ON JULY 17, 2001, WITH THE  
COMBUSTION ENGINEERING OWNERS GROUP (CEOG)  
REGARDING CE NPSD-1199-P, "MODEL FOR FAILURE OF RCP  
SEALS GIVEN A LOSS OF SEAL COOLING"

On July 17, 2001, a public meeting was held at the NRC Headquarters office in Rockville, Maryland, between the CEOG and the NRC staff. The list of attendees is attached. The purpose of the meeting was to clarify the applicability and scope of the model. The slides are available in ADAMS under accession number ML012040419.

The CEOG stated that the scope of the report is focused on model features, model realism and fault tree models. The CEOG described the operation of the reactor coolant pump (RCP) seals during normal and abnormal conditions. All four stages are capable of withstanding full system pressure and complete failure of all stages are required to cause significant leakage.

One of the issues discussed was "pop-open" of a seal stage. Pop-open is when a seal stage fails open and stays open. The seals used in CE RCPs are hydraulically coupled so that if a seal stage momentarily pops-open the pressure will increase on the other side of the seal stage and help reseal the seal stage.

The CEOG addressed the conservative assumptions in the model. The conservatisms include:

- adverse shaft movement,
- reactor coolant system (RCS) is assumed to be saturated,
- no credit taken for an increase in subcooling of a stage resulting from upstream stage failure,
- leakage that is based on using full RCS pressure rather than the lower pressures expected if there was an RCS leak, and
- a failed seal offers no resistance to flow.

The CEOG concluded their presentation with the following observations:

- Pop-open has been considered and modeled consistent with the relevant data.
- The model provides insights into the importance of emergency operating procedures actions.

The staff felt that the CEOG presentation was informative and will help focus the staff's request for additional information.

Project No. 692

Attachment: Meeting Attendees

cc w/att: See next page

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CE Owners Group

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**ATTENDANCE LIST FOR MEETING BETWEEN  
NRC AND THE CEOG  
CE NPSD 1199-P, "MODEL FOR FAILURE OF RCP SEALS  
GIVEN A LOSS OF SEAL COOLING"  
JULY 17, 2001**

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Bruce Mrowca

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