

Release

March 21, 2002

MEMORANDUM TO: John H. Flack, Chief
Regulatory Effectiveness Assessment and Human Factors Branch
Division of Systems Analysis and Regulatory Effectiveness

FROM: Mark A. Cunningham, Chief /RA/
Probabilistic Risk Analysis Branch
Division of Risk Analysis and Applications

SUBJECT: REVIEW OF PBMR ANALYTICAL CODES AND SOFTWARE
CONTROLS

On August 16, 2001, Exelon made a presentation related to the proposed Pebble Bed Modular Reactor (PBMR). One of those presentations included a presentation on their proposed analytical codes and software controls. One of the slides in that presentation identified a code entitled "Risk Spectrum" for reliability and safety analysis which appears to be the only code of interest to PRAB. (It sounds like this code may be similar to our SAPHIRE code.) In a memorandum from Farouk Eltawila to John Flack and Jack Rosenthal dated January 30, 2002, a request was made for a review of the "PBMR Analytical Codes Data Tables" from the Exelon presentation. The Risk Spectrum code has not been reviewed by the staff. If this code is to be used as part of the licensing basis for the PBMR, either a review of this code or an assessment of the results, possibly using SAPHIRE, will be needed. If a review of the Risk Spectrum code is needed, the applicant will need to provide the code, code manual, input data, and the basis for the selection of the data for staff review. If an assessment is needed, the applicant will need to provide their probabilistic data and the basis for the selection of the data for our review. In either case, the applicant should include discussions of the issues that are different from light-water reactors, e.g., the failure modes and probabilities of passive systems, fuel cladding (coating), and reactivity control systems.

After discussion with the Radiation Protection, Environmental Risk, and Waste Management Branch of DSARE, they will provide any comments related to the COSYMA (health, environmental and economic impact of radiological release assessment code) and LUDEP (dose consequences of radionuclides to respiratory tract and other body organ code) separately.

This completes our review identified in Farouk Eltawila's memorandum dated January 30, 2002.

cc: J. Rosenthal

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*Dia*¹⁷