

February 2, 2001

Dr. Lennart Carlsson
Nuclear Safety Division
OECD Nuclear Energy Agency
Le Seine St. Germain, 12 blvd. des Iles
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FRANCE

Dear Dr. Carlsson:

We would like to acknowledge the excellent work you have done in summarizing the white papers prepared by the member countries including comments received during the December Board Meeting. The following summarizes NRC comments and those of the Halden associate members in the U.S. In addition, we would like to suggest that the Halden Project establish closer ties with CSNI and its working groups and special expert groups to solicit input from them periodically on research needs.

Introduction

The third step of the three step approach should reflect the board's role in monitoring the effectiveness of program implementation, execution and utilization of results.

Fuel Programmes

NEA has done a good job of condensing the material present in the original paper's fuel section, which we drafted with input from the U.S. associate members. The fuel focus areas seem to be appropriate.

Materials Programmes

Although materials from decommissioned components will have higher fluences, they will probably not be high enough to address PWR IASCC issues. This limitation might be mentioned.

The sentences on in-reactor instrumentation and coupling of Halden work with other programs do not seem clear. Perhaps it would be better to say something like the following.

"The Halden Project should maintain or even strengthen its unique instrumentation capabilities. In addition, the Project should create more links with laboratories that have strong Post-irradiation examination capabilities and can provide an integrated approach to analysis and interpretation of results."

The capabilities of the Halden reactor can and should be utilized in evaluating pressure vessel embrittlement issues. The white paper (Section 3.2) suggests that such studies would remain limited to “separate effects studies.” In Section 3.3 the emphasis in the text and bulleted items is on flux effects. A stronger program should be developed to explore the key variables affecting embrittlement, and some of the emerging issues such as irradiation coupled with long-term thermal embrittlement, and embrittling metallurgical phases that emerge at high fluences.

Human-Machine Programmes

Given the general needs expressed, the program items are appropriate. The two areas of competition and information management are not as well developed as the others and may not be strong points for Halden. The use of virtual reality for training needs further development. Within the human factors area, an item should be added on data mining of existing Halden data and data from other sources for application to human reliability analysis. There should also be better indication of priorities and the relationship of the items to whether they support the industry or regulatory members.

Safety of Digital Systems Programmes

The research needs and program items in this area are appropriate. The program items in the area of digital reliability estimates should include testing of methods under development by the NRC and digital system vendors. For the COTS program item the research should include an evaluation of the level of confidence that can be derived from operational experience and the development of procedures for using COTS operational experience for predicting reliability.

Sincerely,

/RA/

Margaret V. Federline, Deputy Director
Office of Nuclear Regulatory Research

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