

May 3, 2004

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SUBJECT: U.S. NUCLEAR REGULATORY COMMISSION STAFF COMMENTS ON DRAFT  
SAFETY GUIDE DS 325

Dear Dr. Deitrich:

Please find enclosed comments on Draft Safety Guide DS 325, "The Operating Organization and the Recruitment, Training and Qualification of Personnel for Research Reactors." You requested our comments on this draft safety guide in an e-mail dated March 3, 2004.

We believe that the draft safety guide will provide needed guidance to research reactor owners and operators. You asked us our opinion on Annex II of the document. We believe that examples which show good practice in accordance with the contents of the guide can be very useful to users of the guide. Because it is an example and not part of the formal guide, a high level of detail in the annex is not a concern.

The guide does not contain an example of a requalification program. A strong requalification program is as important to maintaining safety at a research reactor as the initial training program for reactor operators and senior reactor operators. We have enclosed, for your consideration as an annex, an example of a requalification program.

I was assisted in the development of these comments by Patrick Isaac, who was an early contributor to the development of the guide. If you have any questions, please contact me at 301-415-1127.

Sincerely,

**/RA/**

Alexander Adams, Jr., Senior Project Manager  
Research and Test Reactors Section  
New, Research and Test Reactors Program  
Division of Regulatory Improvement Programs  
Office of Nuclear Reactor Regulation

Enclosures: as stated

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## U.S. NUCLEAR REGULATORY COMMISSION STAFF COMMENTS

### IAEA Draft Safety Guide

#### “The Operating Organization and the Recruitment, Training and Qualification of Personnel for Research Reactors,” DS 325

General - There are still typos in the document that we did not flag. Suggest that an IAEA technical editor review the document.

Para 218 - In some member states, the regulatory body may need to review and approve significant organizational changes.

Para 219 - The statement is made that the reactor manager should hold a license or certification issued by an appropriate authority. That is not universal practice. For example, in the United States, facility directors are not required to hold a license unless they operate the reactor. However, there may be minimum qualifications in terms of experience, education, etc. that they need to meet. Suggest that this be changed to a “may” statement or wording be added to the paragraph to indicate that a set of minimum qualifications can substitute for licensing at this management level.

Para 244 - The paragraph discusses “modeling the new behaviors.” It is not clear in the context of the paragraph what this means. Does this mean “determining staff training needs?”

Para.245 - The first sentence of this paragraph is not clear. Suggest “Part of a manager's role is to set the standards and expectations for all staff in all aspects of safe management of a research reactor.”

Para 254 - The paragraph discusses reactor safety. Should radiation safety, which could be considered a part of reactor safety, also be referenced?

Para 265 - First two sentences of this section appear to say the same thing. Consideration should be given to dropping one of the sentences.

Para 272 - This paragraph appears to be out of place. The topic could as easily be radiation safety, experiment operation, reactivity control, piping lineups or a number of other areas of operations where attention to detail is important. Suggest dropping this paragraph.

Para 273 - Start subsection (2) with the word “Verify” to match format of section.

Para 279 - Given the importance of emergency planning, some additional guidance may be appropriate in this section (e.g., ability to identify and characterize emergency situations, maintaining emergency equipment, etc.).

Para 285 - The last sentence says that the operating organization should periodically prepare reports. Should some guidance be given as to the topics of the reports?

Para 292 - Item (5). Replace “suggesting” with “reviewing.”

Para 297 - Although “extended shutdown” is informally defined in the paragraph, given the increased interest in this reactor state, consideration should be given to adding a formal definition to the glossary.

Para 302 - Not all circumstances require a security clearance. Instead, a background investigation may be required to help ensure the trustworthiness of new staff.

Para 303 - First sentence cross out "retiring." Senior staff can leave for a number of reasons, third sentence, change "until training can be" to "until training of a replacement can be."

Para 304 - Consider adding that the results of the medical assessment may lead to restrictions on the activities that a person is able to perform. For example, a heart condition may result in a restriction that the person cannot be at the controls of the reactor without a second person in the control room.

Para 305 - Not completely sure what the point is in this para. May want to give an example.

Section 4.3.1 - Reference is made to "operating personnel." Is this "direct operating personnel?"

Para 414 - Statement is made that training for a very small facility can be completed in less than three months. Suggest changing this to "may" be completed. This paragraph discusses the training program. Consider adding a paragraph about the types of reactivity manipulations that should be practiced and a requirement for trainees to have a minimum number of reactivity manipulations as part of the training program.

Para 422 - Reference is made to "operating personnel." Is this "direct operating personnel?"

Section 4.5 - Consider adding a paragraph about performing a minimum number of reactivity manipulations as part of continuing qualification. Also consider a requirement that persons holding specific titles carry out the responsibilities of the title for a minimum amount of time as part of continuing qualification.

Para 429 - Last sentence. Replace "re-qualification examination" with "re-qualification program" to recognize that more than just passing an examination may be needed.

Section 5 - Shall statements appear in this section where the rest of the document uses should statements. Was the use of shall statements deliberate?

Para 506 - This paragraph states that the reactor manager and shift supervisors shall hold a license or certification issued by an appropriate authority. In the United States, the need to hold a license is determined by activities to be performed (i.e., manipulate the controls of the reactor), not the person's title. Suggest changing the last sentence from "shall" to "may."

Para 601 - Add requalification records to the list of records.

Glossary - Definition of the term "operating organization" and "reactor management" should be added to the Glossary.

## Annex II

We believe that giving examples of good practice can be a useful addition to the safety guide. The annex should be retained. Consideration should be given to providing an additional example of a requalification program. An example is attached to these comments for your consideration. Specific comments on Annex II follow.

Initial training - Document talks about columns to show the different levels of knowledge between a reactor operator and senior reactor operator. However, in the Annex italics are used.

Assessment - A proposal is given for the oral examination. Similar guidance should be provided for the content of the comprehensive written examination. See for example 10 CFR 55.41 and 44.43.

Table AN.1, Part A, Number 1 - Some additional suggested topics are 1.4, Cross Sections (micro and macro), 1.5, Reaction Rate, and 1.6, Nuclear Fission and Neutron Multiplication.

Table AN.3 - There does not appear to be any difference between reactor operator and senior reactor operator. The exam should focus on the duties for each position. Consideration should be given to adding a reactor start up to the examination. It tests more areas of knowledge than a power correction. Why a maximum amount of time. Suggest a minimum amount of time with the examination running for the amount of time needed after the minimum is met to allow the examiner to reach a supportable conclusion about the candidate.

Appendix AN.I - We believe that the training for a reactor operator should be broader than the training suggested by the appendix. The reactor operator should know what actions to take and why.

Section 1.3 - All except the third bullet should be italics.

Section 2 - bullets 13 (Neutron flux measuring...) and 14 (Qualitative treatment....) should be italics.

Section 3 - bullets 7 -10 and 12 -13 should be italics.

Section 4 - For consistency, title should be bold and italics. Bullet 4 should be italics.

Section 5 - For consistency, title should be bold and italics. Bullets 7, 9 and 10 should be italics.