



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS  
WASHINGTON, DC 20555 - 0001

December 12, 2003

Dr. William D. Travers  
Executive Director for Operations  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

Dear Dr. Travers:

SUBJECT: DRAFT NUREG-0800, STANDARD REVIEW PLAN (SRP),  
CHAPTER 18.0, HUMAN FACTORS ENGINEERING

During the 508<sup>th</sup> meeting of the Advisory Committee on Reactor Safeguards on December 3-5, 2003, we met with representatives of the NRC staff to discuss the updates to Chapter 18.0 of the SRP and the documents referenced in that chapter: NUREG-0711, Rev. 2, "Human Factors Engineering Program Review Model," for guidance on the review process; NUREG-1764, "Guidance for the Review of Changes to Operator Actions," for criteria tailored to plant modifications and license amendment requests involving credited operator actions; and NUREG-0700, Rev. 2 "Human-System Interface Design Review Guidelines," for guidance concerning human-system interfaces. Our Subcommittee on Human Factors reviewed this matter during a meeting held on December 2, 2003. We also had the benefit of the documents referenced.

#### CONCLUSIONS AND RECOMMENDATIONS

1. The update to Chapter 18.0 of the SRP and the documents referenced in that chapter properly incorporate needed changes that facilitate anticipated reviews and clarify the human factors engineering review process.
2. The staff has developed in NUREG-1764 an innovative use of risk importance measures to screen licensee submissions for human factors review and to guide the depth and detail of these reviews. This significant development holds the promise of more effective use of staff resources and improved plant safety.

#### DISCUSSION

The staff has completed an update to Chapter 18.0 of the SRP and its associated documents (NUREG-0700, NUREG-0711, and NUREG-1764). This chapter of the SRP provides the framework for the conduct of human factors engineering reviews. This update is needed to support reviews of advanced reactors and digital upgrades to existing control rooms. Changes have been made to move review process guidelines from NUREG-0700 to NUREG-0711. In addition, the formats of the documents have been made consistent. NUREG-1764 is a new document that provides risk guidelines to enable a graded approach to determining the level of human factors review by the staff. These documents incorporate needed changes to facilitate anticipated reviews and to clarify the human factors engineering review process.

The staff has developed a method using risk importance measures to screen licensee submissions for human factors review. The method is applicable to new actions such as the substitution of manual activities for automated actions, changes in components affecting human performance, and changes in the environment for human performance. The screening method provides guidance on the level of detail for the human factors review merited by the submission.

The screening method is an innovative use of risk in the human factors arena and is being tested by NRR. We look forward to seeing how this testing progresses. The use of risk information in human factors reviews holds the promise of more efficient use of NRC resources to focus on issues of greatest risk significance and reduce the extent of staff reviews of human actions if these actions can be shown to have limited or no risk significance. It may well lead to improved plant safety.

Sincerely,

**/RA/**

Mario V. Bonaca  
Chairman

References:

1. ACRS report dated July 23, 2002, to Chairman Richard A. Meserve, Subject: Draft Final Revision 1 to Regulatory Guide 1.174 and to Chapter 19 of the Standard Review Plan.
2. ACRS letter dated September 24, 2002, to Dr. William D. Travers, Executive Director for Operations, Subject: Human Factors and Human Reliability Analysis Research Plans.
3. ACRS letter dated November 13, 1995, to Mr. James M. Taylor, Executive Director for Operations, Subject: NUREG-0700, Revision 1, "Human-System Interface Design Review Guidance."
4. U.S. Nuclear Regulatory Commission Standard Review Plan, NUREG-0800, Chapter 18.0, "Human Factors Engineering," Draft Revision 2, December 2003.
5. U.S. Nuclear Regulatory Commission, NUREG-0700, Revision 2, "Human-System Interface Design Review Guidelines," May 2002.
6. U.S. Nuclear Regulatory Commission, NUREG-0711, Revision 2, "Human Factors Engineering Program Review Model."
7. U.S. Nuclear Regulatory Commission, NUREG-1764, "Guidance for the Review of Changes to Human Actions," Final Report.