



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

ACRSR-2125

May 13, 2005

Mr. Luis A. Reyes
Executive Director for Operations
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

SUBJECT: GUIDANCE FOR ASSESSING EXEMPTION REQUESTS FROM NUCLEAR
POWER PLANT LICENSED OPERATOR STAFFING REQUIREMENTS

Dear Mr. Reyes:

During the 522nd meeting of the Advisory Committee on Reactor Safeguards, May 5-6, 2005, we reviewed the proposed revisions to NUREG-0800, "Standard Review Plan" (SRP) Chapter 13.0, "Conduct of Operations," Section 13.1.2 - 13.1.3, "Operating Organization," and the associated supporting document, NUREG-1791, "Guidance for Assessing Exemption Requests from the Nuclear Power Plant Licensed Operating Staffing Requirements Specified in 10 CFR 50.54(m)." During our review, we had the benefit of discussions with representatives of the NRC staff and of the document referenced.

CONCLUSIONS AND RECOMMENDATIONS

1. The revision to SRP Section 13.1.2 -13.1.3 should be issued.
2. Sections 10.1.3.2 and 10.3.3 of NUREG-1791 should be revised to emphasize the importance of objective measures to evaluate the safety implications of staffing schemes. The development of objective criteria for using simulation data in the evaluation should be explored.
3. NUREG-1791 will provide useful guidance for the staff, but it should be modified as recommended above. It will also provide guidance to applicants seeking exemptions to 10 CFR 50.54(m).

DISCUSSION

The introduction of advanced reactor designs and the increased use of advanced automation technologies in existing nuclear power plants will likely change the roles, responsibilities, composition, and size of the crews required to control plant operations.

Current requirements for control room staffing are primarily given in 10 CFR 50.54(m). They are based on the concept of operation for existing light-water reactors that may no longer apply to upgraded control rooms or future reactors. Therefore, applicants for an operating license for an advanced reactor and current licensees who have implemented significant changes to existing control rooms may submit applications for exemptions from current staffing regulations. To prepare for this eventuality, the staff has drafted a revision to the SRP Section 13.1.2-13.1.3 that refers staff reviewers to NUREG-1791.

NUREG-1791 describes a process for reviewing and determining the acceptability of exemption requests, including review of the:

- concept of operations,
- operational conditions,
- operating experience,
- functional requirements and function allocation,
- task analysis,
- job definitions,
- staffing plan,
- additional data and analyses, and
- staffing plan validation.

Useful checklists and references support the guidance in NUREG-1791. We note the omission of NUREG/CR-6838, "Technical Basis for Regulatory Guidance for Assessing Exemption Requests from the Nuclear Power Plant Licensed Operator Staffing Requirements Specified in 10 CFR 50.54(m)," from this set of references. The staff stated that this document provides the technical basis for the guidance in NUREG-1791.

The evaluation criteria applied at each stage of the review are qualitative and subjective. Ideally, the reviewer would have quantitative measures of the safety of the plant with the proposed staffing level. Such measures are not within the current capability of probabilistic risk assessment techniques. As a practical alternative, control room simulators could be used to objectively assess the relative ability of different staffing schemes to respond to a spectrum of operating, off-normal, design-basis-accident, and beyond-design-basis conditions. The value of control room simulation has been clearly demonstrated, for example, in the validation of emergency operating procedures.

Full-scope simulators may not be available for new plant designs when an applicant applies for an exemption. In this case, analytic simulators or other simulation techniques may be used as alternatives. Section 10.1.3.2 of NUREG-1791 discusses human-in-the-loop simulation techniques but stresses the difficulties of simulator validation without recognizing the benefits. This section should be revised to emphasize the importance of objective measures to evaluate the safety implications of staffing schemes. Similarly, the development of objective criteria for using simulation data in the evaluation should be explored for possible inclusion in Section 10.3.3.

Revisions to SRP Sections 13.1.2 and 13.1.3 should be issued. NUREG-1791 will provide useful guidance for the staff, but it should be modified as recommended above. It will also provide guidance to applicants seeking exemptions to 10 CFR 50.54(m).

Sincerely,

/RA/

Graham B. Wallis
Chairman

References:

Memorandum to J. Larkins, Executive Director, ACRS, from B. Boger, Director, Division of Inspection Program Management, Subject: Request for Advisory Committee on Reactor Safeguards Review of Standard Review Plan Chapter 13.0, Sections 13.1.2-13.1.3, "Operating Organization" Revision and Supporting Documents dated April 4, 2005.