



U.S. NUCLEAR REGULATORY COMMISSION
STANDARD REVIEW PLAN
OFFICE OF NUCLEAR REACTOR REGULATION

SECTION 12.1

ASSURING THAT OCCUPATIONAL RADIATION EXPOSURES
ARE AS LOW AS IS REASONABLY ACHIEVABLE

REVIEW RESPONSIBILITIES

Primary - Radiological Assessment Branch (RAB)

Secondary - None

1. AREAS OF REVIEW

The following areas of the applicant's safety analysis report (SAR) related to assuring that occupational radiation exposures (ORE) will be as low as is reasonably achievable (ALARA) are reviewed:

1. POLICY CONSIDERATIONS

- a. Management policy with respect to designing and constructing the plant (preliminary safety analysis report, PSAR) and with respect to operating the plant (final safety analysis report, FSAR) and the planned organizational structure (PSAR).
- b. The applicable activities carried on by the individuals in management having responsibility for radiation protection (PSAR).
- c. Information describing the implementation of policy, organizational, training, and design review guidance or requirements provided in Regulatory Guide 8.8, Regulatory Guide 8.10, Regulatory Guide 1.8, and in 10 CFR Part 20. Information describing alternatives, if such are proposed (PSAR and update in FSAR).

2. DESIGN CONSIDERATIONS

- a. Facility and equipment design considerations (PSAR) (but not design features, as in SAR Section 12.3).
- b. The description of the use of dose assessment (SAR Section 12.4) and the resultant man-rem doses associated with various work functions for evaluating the facility design relative to assuring that ORE will be ALARA (PSAR).
- c. The description of how experience from past designs, from various design guidelines, such as Regulatory Guide 8.8, and from operating plants is used to develop improved radiation protection designs (PSAR).
- d. Information describing the implementation of the design guidelines of Regulatory Guide 8.8 and other industry developed design guidance that includes the ALARA Criteria. Information describing alternatives, if such are proposed (PSAR and update in FSAR).

USNRC STANDARD REVIEW PLAN

Standard review plans are prepared for the guidance of the Office of Nuclear Reactor Regulation staff responsible for the review of applications to construct and operate nuclear power plants. These documents are made available to the public as part of the Commission's policy to inform the nuclear industry and the general public of regulatory procedures and policies. Standard review plans are not substitutes for regulatory guidance or the Commission's regulations and compliance with them is not required. The standard review plan sections are based on Revision 2 of the Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants. Not all sections of the Standard Format have a corresponding review plan.

Published standard review plans will be revised periodically, as appropriate, to accommodate comments and to reflect new information and experience.

Comments and suggestions for improvement will be considered and should be sent to the U.S. Nuclear Regulatory Commission, Office of Nuclear Reactor Regulation, Washington, D.C. 20555.

11/24/75

3. OPERATIONAL CONSIDERATIONS

- a. The techniques and methods that will be used for developing detailed operational plans and procedures (PSAR).
- b. The description of how procedures for operation may impact on and interact with the plant design and on the design process (PSAR).
- c. The use of operating plant experience in planning the operational considerations for new plant designs (PSAR).
- d. The criteria and conditions under which various exposure reduction procedures and techniques are implemented (FSAR).
- e. Information describing the implementation of radiation protection programs, and operational guidance of Regulatory Guide 8.8 and Regulatory Guide 8.10. Information describing alternatives, if such are proposed (PSAR and update in FSAR).

II. ACCEPTANCE CRITERIA

The descriptive information in the SAR is considered to be sufficient if it meets the minimum information needs set forth in Section 12.1 of the "Standard Format and Contents of Safety Analysis Reports for Nuclear Power Plants," Revision 2. Specific acceptance criteria for these areas of review are as follows:

1. POLICY CONSIDERATIONS

Acceptability will be based on evidence in the PSAR that a policy for assuring that ORE will be ALARA has been formulated, described, displayed, and will be implemented in accordance with Regulatory Guide 8.8, Regulatory Guide 8.10, C.1, and Regulatory Guide 1.8. This includes designating and assigning a specific individual responsibility and authority for implementing ALARA policy. Alternative proposed policies will be evaluated on the basis of a comparison with the Regulatory Guides and industry standards.

2. DESIGN CONSIDERATIONS

Acceptability will be based on evidence that the design methods, approach, and interactions are in accordance with Regulatory Guide 8.8, including incorporation of: measures for reducing the need for maintenance is required; measures to improve the accessibility to components requiring periodic maintenance or inservice inspection; measures to reduce the production, distribution and retention of activated corrosion products throughout the primary system; reviews of the design by competent radiation protection personnel; instructions to designers and engineers regarding ALARA design; feedback of experience from operating plants and past designs; and continuing facility design reviews. Alternative proposed design policies will be evaluated on the basis of a comparison with the Regulatory Guide.

3. OPERATIONAL CONSIDERATIONS

Acceptability will be based on evidence that the applicant has a program to develop plans and procedures in accordance with Regulatory Guide 8.8, which can incorporate the experiences obtained in facility operation into facility and equipment design and into operations planning and which will implement specific exposure control techniques. In the FSAR, acceptance of criteria and conditions under which various exposure reduction procedures and techniques are implemented will also be based on Regulatory Guides 8.8

and 8.10, C.2. Alternative proposed plans and procedures will be evaluated on the basis of a comparison with the Regulatory Guides.

III. REVIEW PROCEDURES

The information furnished in the SAR is reviewed for completeness in accordance with the "Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants," Revision 2. RAB reviews the management policy and the planned organizational structure to determine how the guidance given in Regulatory Guides 8.8, 8.10 and 1.8 will be implemented or whether alternatives have been proposed. The organizational structure review includes determining if the individuals responsible for the radiation protection program are on a level in management that will assure implementation of management's commitment for assuring that ORE will be ALARA. Any problems concerning the review of organizational structure, as related to the radiation protection manager will be communicated to Quality Assurance Branch, which has primary review responsibility for this item, in Chapter 13. The reviewer uses ANSI N18.7-1972 for additional guidance on acceptable operating organizations.

The reviewer evaluates information in this section to determine if the organizational structure provides a mechanism for the radiation protection manager and his organization interacting with design groups to assure that methods and techniques for reducing ORE will be incorporated in the design of the plant. Where the future plant radiation protection manager has not been selected, design review should be accomplished in accordance with the guidance of Regulatory Guide 8.8, or a proposed alternative. For those applicants that have operating reactors the reviewer determines that a review of the proposed plant design is conducted by appropriate personnel from the operating plant. The reviewer determines from information furnished by the applicant that he has incorporated previously accepted design features and has used operating experience to improve on the design of the plant with regard to assuring that ORE will be ALARA. The reviewer compares the material in this section with the requirements of 10 CFR Part 20 and the guidelines of Regulatory Guides 8.8 and 8.10.

Based on the review RAB may request additional information or request the applicant to modify his submission in order to meet the acceptance criteria given in Section II.

IV. EVALUATION FINDINGS

The staff's review should verify that adequate and sufficient information is contained in the SAR and amendments to arrive at conclusions of the following type, which are to be included in the staff's Safety Evaluation report. The report will include a summary of the applicant's coverage, the staff's basis for review and acceptance criteria, and the findings of the review. The following is a brief representation of the evaluation findings:

"12.1 Assuring that ORE are ALARA.

"This section of the applicant's SAR has been reviewed to determine the policy, design, and operational considerations related to assuring that occupational radiation exposures (ORE) will be as low as is reasonably achievable (ALARA). The review covered the description of the applicant's management policy and organizational structure regarding radiation protection, the design considerations that are used to apply experience from past designs

and operating experience toward achieving improved designs, and the methods and techniques used for developing plans and procedures for assuring that ORE will be ALARA. The review included analysis of the manner by which the applicant's policy, design, and operational considerations conform to the guidelines of Regulatory Guides 8.8, 8.10, and 1.8 or provide acceptable alternatives.

"The basis for acceptance has been conformance of the management policy, design, and operational considerations with established guidelines, criteria, and good practice at licensed nuclear plants, including those provided in Regulatory Guides 8.8, 8.10, and 1.8. The management policy and individual responsibilities are appropriately implemented both with regard to the design process and with regard to developing and considering operational procedures.

"It is concluded that the policy considerations, design considerations, and operational considerations related to assuring that ORE will be ALARA conform to the Commission's Regulations and to the appropriate Regulatory Guides and industry standards and are considered acceptable."

V. REFERENCES

1. Regulatory Guide 8.8, "Information Relevant to Maintaining Occupational Radiation Exposures As Low As Practicable (Nuclear Reactors)."
2. 10 CFR Part 20, "Standards For Protection Against Radiation."
3. Regulatory Guide 8.10, "Operating Philosophy For Maintaining Occupational Radiation Exposures As Low As Practicable."
4. Regulatory Guide 1.8, "Personnel Selection and Training."
5. Regulatory Guide 1.70, "Standard Format and Contents of Safety Analysis Reports for Nuclear Power Plants," Revision 2.
6. ANSI N18.7-1972, "Administrative Control for Nuclear Power Plants," American National Standards Institute (1972).

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