



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

SECTION 6.1.2

ORGANIC MATERIALS

REVIEW RESPONSIBILITIES

Primary - Accident Analysis Branch (AAB)

Secondary - None

I. AREAS OF REVIEW

1. The coating systems (paints) used inside the containment are evaluated as to suitability for design basis accident (DBA) conditions.
2. The stability of materials (particularly organics) and their decomposition products are examined to determine the potential for interactions with engineered safety features (ESF), such as filters (poisoning). Radiation and chemical effects are considered. (Physical effects are considered by the Containment Systems Branch.)

II. ACCEPTANCE CRITERIA

A coating system is acceptable if:

1. It meets Regulatory Guide 1.54 (Ref. 1) or equivalent; or, the area covered with the system is a negligible fraction of the containment interior surfaces.
2. No adverse interactions with engineered safety features are likely as a result of materials released by radiation decomposition or chemical reaction of the coating system in the containment post-accident environment.

III. REVIEW PROCEDURES

The reviewer selects and emphasizes aspects of the areas covered by this review plan as may be appropriate for a particular case. The judgment on the areas to be given attention and emphasis in the review is based on an inspection of the material presented to see whether or not it is similar to that recently reviewed on other plants and whether items of special safety significance are involved.

A detailed evaluation of every paint and organic material found in the containment should not be attempted. The "significant" paints and organic materials are reviewed, where significance is judged by the rad-gram exposure level (i.e., by the product of the estimated DBA unit radiation dose and the mass of the particular coating) for both coatings and plastics, and by the possibility of clogging sump screens for coatings.

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 guides or the Commission's regulations and compliance with them is not required. The standard review plan sections are keyed to 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. 20545.

11/24/75

9511010237 751124
PDR NUREG
75/087 R PDR

1. Review of coating systems:
 - a. The reviewer verifies that each significant coating system meets the recommendations of Regulatory Guide 1.54 (Ref. 1).
 - b. The reviewer verifies that any information supplied regarding methods of application corresponds to manufacturer's recommendations.
 - c. The reviewer confirms that the quantities of unidentified coatings are insignificant.
2. Review of gases and soluble materials released by coating systems:
 - a. The radiation levels in the containment are estimated (see Standard Review Plan 3.11.5). The reviewer estimates the quantities and types of materials released due to the radiation exposure, and verifies that the decomposition products cannot adversely affect any engineered safety feature system. The generation of methane or other volatile alkanes to form a source for organic iodides is of specific concern (Ref. 2).
 - b. Chemical effects are also considered in the potential for material release. This area is reviewed on a case-by-case basis (Ref. 3).

IV. EVALUATION FINDINGS

The reviewer verifies that sufficient information has been provided and the review and calculations support conclusions of the following types, to be included in the staff's safety evaluation report:

"The containment coating systems have been evaluated as to their suitability to withstand a postulated design basis accident (DBA) environment. The coating systems chosen by the applicant have been qualified under conditions which take into account the postulated DBA conditions. No adverse interactions (under DBA conditions) between the decomposition products and the engineered safety features have been established. The amount of unqualified paint in the containment is not significant. The staff concludes, therefore, that the coating system will remain intact under postulated design basis accident conditions."

V. REFERENCES

1. Regulatory Guide 1.54, "Quality Assurance Requirements for Protective Coatings Applied to Water-Cooled Nuclear Power Plants."
2. ANSI N4.1, "Polymeric Materials for Service in Ionizing Radiation, Classification System for," American National Standards Institute (1973).
3. ANSI N101.2, "Protective Coatings (Paints) for Light Water Nuclear Reactor Containment Facilities," American National Standards Institute (1972).

SRP 6-1-3