

memorandum

DATE:

REPLY TO
ATTN OF: Office of Nuclear Safety Policy and Standards:R. Englehart:301-903-3718

SUBJECT: Clarification on Safety Class/Safety Significance of Containment/Confinement Structures
(Interpretation Request)

TO: Robert W. Poe, ORO

REF: Memorandum, Poe to Englehart, same subject, dated October 19, 1998

Background: Several safety documents under review by ORO have identified primary containment/confinement barriers as the principal protection barrier between the hazardous materials and workers, the public and the environment. The present ORO position on whether to designate these structural barriers as safety structures, systems, and components (SSCs) is as follows:

“Structural barriers, generally passive, are necessary to contain or confine hazardous (radioactive) materials. They provide defense-in-depth protection to prevent the release and spread of the hazardous effects of those materials to the workers, the public, and the environment. Accordingly, and regardless of a facility’s Nuclear Category 2 or 3 classification, the barrier at a minimum is a Safety Significant Design Feature. It would be a Safety Class Design Feature if the unmitigated hazard could impact the public. Further, if a Design Feature is described in the SAR, it does not have to be repeated in the TSR unless it is necessary to list it as an LCO.”

DOE requirements and standards that relate to the identification, implementation and maintenance of safety SSCs include DOE Orders 420.1, 5480.22 and 5480.23, and DOE standards DOE-STD-1027 and DOE-STD-3009.

Issue: Based on DOE requirements and standards, is the ORO position stated above regarding the designation of these barriers as safety SSCs appropriate? Alternatively, if safety management programs (e.g., radiation protection, configuration management and emergency preparedness) are shown to potentially reduce accident likelihood and/or consequences, can they reduce or obviate the need to declare these barriers as safety SSCs?

Discussion: With respect to the second question, DOE Order 5480.23 requires that a SAR describe principal SSCs including safety features that prevent and/or mitigate the consequences of all postulated accidents. Safety management programs cannot obviate the need for safety SSCs to be so designated in a SAR.

ORO’s stated position regarding Safety Class (SC) and Safety Significant (SS) classification, and Technical Safety Requirement (TSR) implications is correct but requires some clarification. DOE-STD-3009 defines the terminology and concept of SC and SS SSCs. The terminology includes the idea that structures can be safety class or safety significant, according to the definitions included in the

Standard. The terminology is also used in the Implementation Guide to section 4.1 of Order 420.1, Nuclear and Explosives Safety Design Criteria.

The protection of the integrity of a structure as a contributor to safety can be accomplished in at least two ways. It can, as suggested in ORO's above stated position, be designated as a SC or SS SSC. This designation would have the advantage of treating the structure in a TSR in some way so that it has active attention appropriate for the structure. Options for TSR treatment could include maintaining the integrity of the structure by establishing an Limiting Condition for Operation (LCO), establishing a surveillance requirement for the structure, or putting the structure on a maintenance list for safety SSCs. For new facilities or structures, or significant modifications to existing structures, the designation as a SC or SS SSC also has the effect of specifying design criteria through the Implementation Guide for section 4.1 of Order 420.1.

An alternative to TSR treatment would be to identify the structure as a safety class or safety significant "design feature" in a TSR Appendix and/or describe the structure in the SAR to identify its safety function and design attributes (see DOE Order 5480.22). This has the effect of requiring prior DOE review and approval before any modification to the structure. Designation as a safety "design feature" does not require the active attention that inclusion in surveillance requirements, as an LCO, or on a special maintenance list would offer. But it must receive sufficient attention to ensure that the structure is maintained to protect its safety function.

Richard L. Black, Director
Office of Nuclear Safety
Policy and Standards

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