

Public Meeting

Safety Classification of Structures

Systems and Components

August 5, 2020

Purpose/Process

- Purpose:
 - The purpose for this meeting is for the NRC to gain an understanding of Oklo's structure, systems, and components (SSC) Classification
 - With the ultimate goal to assure that SSCs are designed, fabricated, erected, and tested to quality standards commensurate with the importance of the safety functions to be performed.
- Process:
 - NRC staff to present the regulatory framework for SSC Classification
 - Oklo staff to present on how they arrived at SSC classification
 - Discuss how method meets regulations
 - Discussion between NRC and Oklo to determine any gaps between the process used and the regulatory framework
 - Establish next steps

Regulatory Basis

- Two established schemes related to safety classification of SSCs:
 - Definitions in 10 CFR Parts 50.2 and 100.3
 - SSCs relied on to assure integrity of reactor coolant system
 - SSCs relied on to shut down and maintain reactor in safe condition
 - SSCs relied on to limit offsite exposures to below NRC guidelines
 - Definitions in RG 1.233 and NEI 18-04
 - SSCs credited for required safety functions (RSFs) and designed against Design Basis External Hazard Level.
 - Note: RSFs are those functions required to maintain the consequence of one or more design-basis events (DBEs) or the frequency of one or more high-consequence beyond-design-basis events (BDBEs) inside the frequency-consequence (F-C) Target

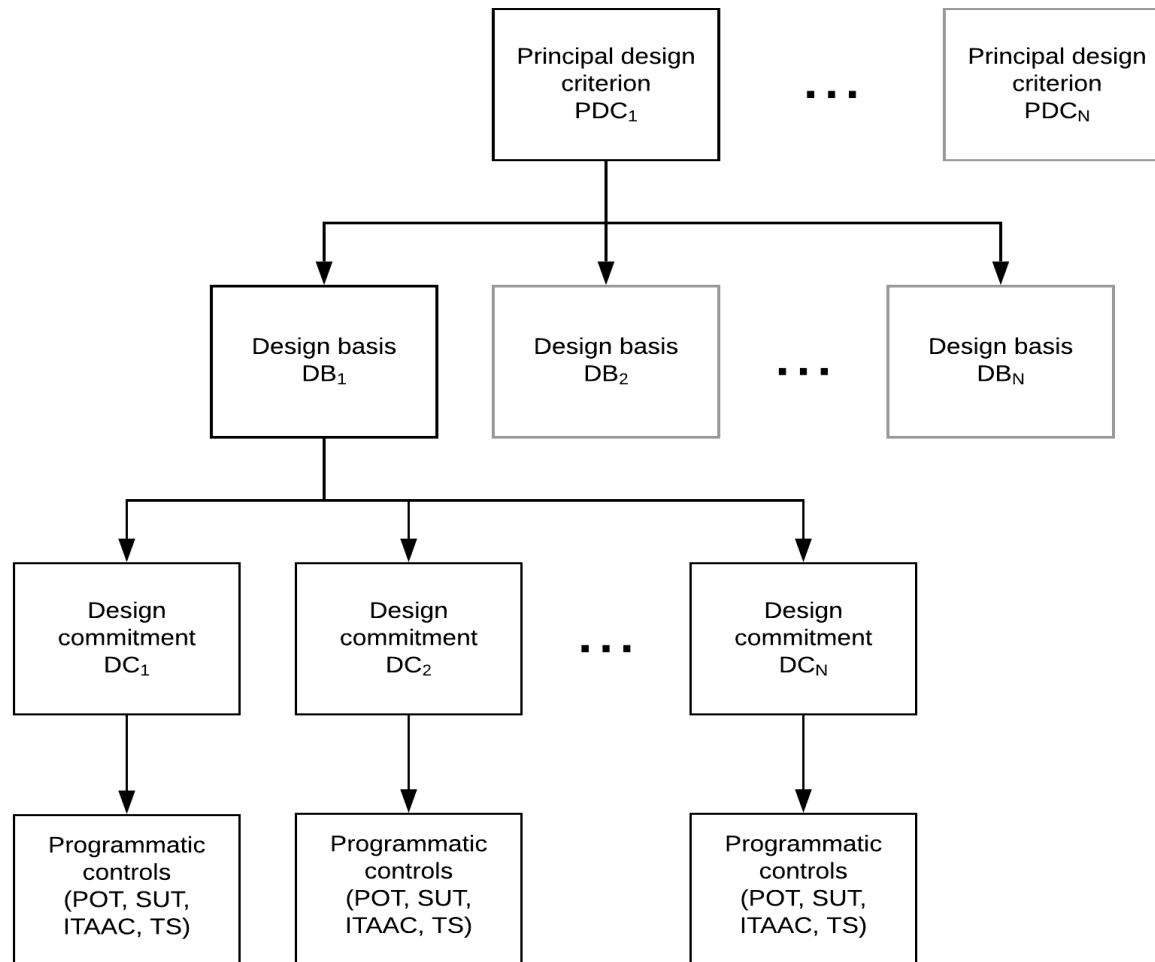
Relationship to safety case

- The safety case for the Aurora design assumes at least one of three shutdown rods inserts and the residual heat load from the reactor system is removed through passive means.
- The shutdown rods and possibly other SSCs related to heat removal and retention of radionuclides, along with the building structure, would be classified as safety related if using the definitions in existing regulations. Therefore an exemption would be required if they are not classified as safety related.
- One approach for an exemption is described in RG 1.233 (and expected to be incorporated into 10 CFR Part 53) would depend on the importance of those systems in keeping the potential dose to an individual at the exclusion area boundary below the established guidelines (e.g., F-C target)
- Other alternative approaches, including those not using traditional safety classification schemes and terms, could be justified

Interdependency of Issues

- The staff needs to understand the methodologies and outcomes related to the maximum credible accident (MCA), other potential events, mechanistic source term (MST), and related topics so that it may further assess the proposed approach for establishing design basis, design commitments, and testing for specific SSCs
- Using an approach similar to RG 1.233 to identify RSFs would likely require an assessment (but not necessarily incorporation into licensing basis events) of the potential offsite dose that could result from unprotected plant transients
- Approaches similar to RG 1.233 also place additional importance on the identification of performance criteria and related special treatment for SSCs that are determined to contribute to the safety case in terms of risk assessments or providing defense in depth.

FSAR Figure 4 -1 : Relationship of PDC to the Design Basis



Initial Observations

- The staff is seeking more information on:
 - The role of Quality Assurance program and related consensus codes and standards (e.g., NQA-1) for SSCs used in fulfilling safety functions
 - General use of consensus codes and standards or other common references to help define materials, purchase specifications, testing, and other possible contributors to SSC capabilities and availabilities
 - Application of special treatments to SSCs to ensure acceptable capabilities and availabilities are defined and maintained