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Criticality safety control at CEA Paris-Saclay

Abstract

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The CEA's organization regarding criticality-safety is the same for each of its nuclear center. First, one or more qualified criticality engineer (QCE) is located directly on nuclear installations containing fissile material. The QCE manages criticality safety in the installations. He develops criticality safety analyses for the installations and participates in the implementation of the resulting rules. Second, a center's criticality engineer (CCE) is in charge of the verification for every modification in each nuclear facilities. He is also in charge to support qualified criticality engineer, and capitalise the knowledge of all the installations. Third, a Criticality Specialist (CS) controls the good functioning of the criticality organization in the center. Furthermore, a criticality safety experts group could assist every criticality engineer of each center's organisation for the criticality calculations and analysis.

This paper details the role of the Criticality Specialist, which is to define an independent opinion on nuclear facilities modifications that could affect the criticality analysis. Its role is also to be an interface between CEA and the French nuclear safety authority for criticality risks in the center. Its action is thus to ensure the quality and consistency of the files sent to the authorities, but without participating in the technical solutions choices.

Then, this paper presents an example of a control carried out on one of the nuclear facilities in Paris-Saclay center. This control is about an implementation of a future operation that may present a criticality risk. The criticality specialist did several further requirements for this operation. In the end, this paper presents how this second line control has been taken into account by the nuclear installation.

Finally, this paper establishes a feedback on the positioning of the criticality specialist regarding the controls performed on nuclear facilities.