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NUCLEAR SAFETY AND DEFENCE IN DEPTH IN CAREM25

This work discusses the technological strategy adopted in CAREM25 to fulfil the Principle of Defense in Depth and its assessment by Deterministic and Probabilistic Safety Analysis (DSA, PSA). The strategy defined for levels 3A and 3B is based on two stages and using passive and active systems. Moreover, the implemented DiD strategy is the basis for setting graduated criteria for safety functions categorization and structures, systems and components (SSCs) classes allocation, allowing to establish coherent design requirements. Safety classification process is executed beginning from the Fundamental Safety Functions and, using attributes, Low Level Safety Functions (LLSFs) including monitoring ones were constructed for each DiD levels and stages. Next, Safety Functional Groups -set of SSCs that fulfill a function- were identified for each LLSF. Finally, categories and classes were allocated. PSA and DSA were used to support this process, evaluating the SSCs relative importance. Moreover, both methodologies were used to provide design feedback for DiD Levels 2 and 3, evaluating different strategies to cope with the postulated initiating events. Findings are presented.
This integral approach based on DiD has facilitated engineering development and the licensing process by providing a comprehensive assessment of systems design and a balanced integration into the plant

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