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Severe Accident Analysis at Koeberg Nuclear Power Station Using MELCOR Computer Code

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In the demonstration of safety of a nuclear power plant (NPP), simulations for all plant states (normal operations, anticipated operational occurrences, design-basis accident, and beyond-design-basis accident) play an important role. Therefore, computer codes have been extensively developed to analyse the different aspects of a nuclear reactor. Thermo-hydraulic system codes are used to study the physical response of the reactor system to postulated transient and accidental events and determine if any failure may lead to a significant release of radioactivity.

MELCOR (Methods for Estimation of Leakages and Consequences of Releases) is one of the codes that can be used for severe accident analysis. Other codes like MAAP (Modular Accident Analysis Program) and ASTEC (Accident Source Term Evaluation Code) can also be used. MELCOR is a fully integrated, engineering-level computer code that models the progression of severe accidents in light water reactor nuclear power plants.

The National Nuclear Regulator (NNR) is developing a computer model of Koeberg Nuclear Power Station (NPS) to be used for severe accident analysis of the plant. This work enables the NNR to independently verify the severe accident analysis submitted by Eskom and ultimately verify if the accident management plans submitted by Eskom are effective. This work will also contribute to the review and assessment of the Koeberg long term operation (LTO) Safety Case submitted by Eskom for approval.

Apply to be considered for a student ; award (Yes / No)?

No

Level for award;(Hons, MSc, PhD, N/A)?

N/A

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