

International Conference on Research Reactors: Safe Management and Effective Utilization

Contribution ID: 190

Type: Oral Presentation

SAFARI 1 SAFETY REASSESSMENT OUTCOME AND MODIFICATIONS IN LIGHT OF THE FUKUSHIMA DAICHI ACCIDENT

Tuesday, 17 November 2015 12:10 (20 minutes)

Following the Fukushima nuclear accident, a directive from South Africa's National Nuclear Regulator was received which required a safety reassessment of the SAFARI 1 research reactor.

The safety reassessment consisted of:

- Evaluation of the response of the SAFARI 1 Research Reactor when facing a set of extreme external events (EEE) and
- Verification of the preventive and mitigation measures chosen following a defence-in-depth (DiD) logic: initiating events, consequential loss of safety functions, severe accident management.

The safety reassessment process was performed in various steps. Site-specific natural external events were firstly identified. The full lists of EEEs identified that may have an impact on SAFARI 1 include earthquakes, external flooding, tornadoes and tornado missiles, high winds, sandstorms, storms and lightning, hurricanes and tropical cyclones, bush fires, explosions, toxic spills, accidents on transport routes, effects from adjacent facilities, biological hazards, and power or voltage surges.

This step was followed by the development of event trees which depict the progressive evolution of the EEE into plant damage states which could potentially lead to public exposure. These evaluations were carried out in accordance with the philosophy of DiD as proposed in the ENSREG stress test specification.

This paper will present the feasibility phase outcome, results of the safety reassessment, as well as some of the resulting modifications and the future plans to conclude the post-Fukushima activities.

Organization

SAFARI-1, Necsa

Country

South Africa

Primary author: Mr MALAKA, SM (NECSA)

Presenter: Mr MALAKA, SM (NECSA)

Session Classification: Safety of Research Reactors

Track Classification: Safety of Research Reactors