

IRRS Good Practices

Review and Assessment (Module 6)

Review and assessment for research reactors

South Africa – Initial Mission

Mission Date: December 2016

Good Practice

The National Nuclear Regulator (NNR) required South African Nuclear Energy Corporation SOC Limited (Necsa) to develop a detailed ageing management program for SAFARI-1 taking into account the considerations and guidelines made by NNR to demonstrate that it could continue to operate safely

Observation

The NNR required Necsa to develop a detailed ageing management program for SAFARI-1 taking into account the considerations and guidelines made by NNR to demonstrate that it could continue to operate safely. There were only a few research reactors in the world with such ageing management programs.

Basis

GSR Part 4¹, 4.6, states that “A safety assessment has to be carried out at the design stage for a new facility or activity, or as early as possible in the lifetime of an existing facility or activity. For facilities and activities that continue over long periods of time, the safety assessment needs to be updated as necessary through the stages of the lifetime of the facility or activity, so as to take into account possible changes in circumstances (such as the application of new standards or new scientific and technological developments), changes in site characteristics, and modifications to the design or operation, and also the effects of ageing.”

IAEA Comments/Highlights

The NNR required Necsa to do a detailed reassessment of the SAFARI-1 research reactor after the Fukushima accident, similar to the European Stress Test. Necsa is responsible for

¹ IAEA GSR Part 4 was superseded by GSR Part 4 (Rev. 1) in 2016.

undertaking and promoting research and development (R&D) in the field of nuclear energy and radiation sciences and technology. This re-assessment was considered to be a strength.

The program contained ageing management and post-Fukushima safety assessment. The result of this program would be used by the NNR to assess and allow the safe continued operation of SAFARI-1 until at least 2030.

The NNR had also performed improvements to what had been identified in the SARIS report as weaknesses related to review and assessment:

- a) In 2016 regulatory reports and records were readily available to the reviewers.
- b) Progress had been made in the development of the competence of NNR staff members, based on the IAEA SARCON subcontract module.

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Good Practice

The NNR required Necsa to develop the PSA level 2 and level 3 to SAFARI 1, to ensure that the research reactor would continue to operate safely without undue radiation risks.

Observation

The NNR required Necsa to develop the Probabilistic Safety Assessment level 2 and level 3 to SAFARI-1, to ensure that the research reactor would continue to operate safely without undue radiation risks. There were only a few research reactors in the world with such a program.

Bases

- (1) GSR Part 1 Requirement 1, states that *“The government shall establish a national policy and strategy for safety, the implementation of which shall be subject to a graded approach in accordance with national circumstances and with the radiation risks associated with facilities and activities, to achieve the fundamental safety objective and to apply the fundamental safety principles established in the Safety Fundamentals”*
- (2) GSR Part 1 para. 2.4 states that *“ The national policy and strategy for safety shall be implemented in accordance with a graded approach, depending on national circumstances, to ensure that the radiation risks associated with facilities and activities, including activities involving the use of radiation sources, receive appropriate attention by the government or by the regulatory body.”*

IAEA Comments/Highlights

No comments or highlights on this good practice.