

## Graded approach applications in nuclear research reactors

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A graded approach is applicable in all stages of the lifetime of a research reactor (site selection, site evaluation, design, construction, commissioning, operation and decommissioning). The IAEA Safety guide no. (SSG-22) presented recommendations on the graded approach to application of the safety requirements for research reactors. In these applications, a graded approach is only used in determining the scope and level of detail of the safety assessment carried out in a particular state for any particular facility or activity. In this document, the graded approach is applied for many applications of ETRR-2 research reactor, such as; the QA level determination during ETRR-2 fabrication and construction stages, and the frequency of Inspection, periodic testing and maintenance. Each application is graded quantitatively, which is considered to be a new trend. Grading was applied based on many factors such as; safety, reliability, design state, complexity, experience, availability, and economic factors. A certain amount of points were assigned to each factor. A formula then be applied to obtain the total amount of points. This total rating may correspond to a general system or to its components.

Key Words: Graded approach, ETRR-2, Maintenance, Quality assurance

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