

Summary Report

ANSN Regional Workshop on the Application of Level 1 Probabilistic Safety Assessment

Bangkok, Thailand 5-9 September 2022

Background

The role of probabilistic methods in safety analysis is outlined in IAEA Safety Standards. The paragraph 4.55 under Requirement 15 of GSR Part 4 (Rev. 1) highlights the objectives of PSA, stating that it shall allow analysts to "determine all significant contributing factors to the radiation risks arising from a facility or activity" and provide the "framework for addressing many of the uncertainties explicitly". The necessity of taking due account of PSA of the plant is accentuated in paragraph 5.76 under Requirement 42 of SSR-2/1 (Rev. 1). Thus, PSA is considered to be an important tool for analysis for ensuring the safety of a nuclear power plant. PSA results provide a basis for the safety related decision-making process, and the realistic estimation of risk profiles allows decision makers to evaluate the priority, effectiveness, and accuracy of safety related decisions. Usage of probabilistic methods in the scope of integrated risk informed decision-making framework was systematically described in INSAG publication (A Framework for an Integrated Risk Informed Decision Making Process INSAG-25). Usage of Level 1 PSA in various applications is described in IAEA Safety Standard SSG-3.

Transferring knowledge in methodology of usage Level 1 PSA in applications to specialists from newcomer countries would contribute to the improvement of their competence in the area of decision-making on matters affecting NPP safety.

Objectives

The purpose of the workshop was to provide a forum for the participating Member States to share knowledge and exchange information on Level 1 PSA and its application. Special attention was placed on PSA related requirements and recommendations reflected in IAEA safety standards along with recent developments in the PSA area including PSA usage in applications. In addition, national experiences and current challenges in the field of PSA and its applications was planned to be discussed.

Work Done

Three and a half days were devoted to giving lectures on Level 1 PSA and its application as well as lectures on integrated risk informed decision-making framework for nuclear power plants. Lectures were given by two external experts and by one lecturer from IAEA staff. Also, short national presentations from 5 participating countries (Indonesia, Thailand, Philippines, Malaysia and Viet Nam) on PSA status in national nuclear safety practices were presented and discussed.

One full day was devoted to training participants in practical usage PSA models for finding safety problems on hypothetical NPP and in development risk-informed assessment of possible solutions. Participants were split into three groups, each of the group led by expert or by IAEA staff member was provided with notebook with pre-installed PSA software (Risk Spectrum PSA Professional 1.3) and PSA model of hypothetical NPP.

Workshop achievements / Recommendations

Such kind of Workshops on PSA Applications with inclusion both theoretical and practical

parts are recommended for organizing by IAEA Secretariat in future since such workshops act as effective tool for training specialists from both embarking countries and countries with mature nuclear programmers.

Further document to be submitted to the PMO separately:

- Final agenda
- List of participants
- Group photo
- Presentations as listed in the agenda



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