IAEA Nuclear Security Assessment Methodologies (NUSAM) Project for Regulated Facilities

Sung Soon Jang *
Korea Nuclear Non-proliferation and Control, 1534 Yuseong-daero, Yuseong-gu, Daejeon
**Corresponding author: ssjang@kinac.re.kr*

1. Introduction

Nuclear Security Assessment Methodologies (NUSAM) is a coordinate research project. The objectives of the NUSAM project is to establish a risk-informed, performance-based methodological framework in a systematic, structured, comprehensive and appropriately transparent manner; to provide an environment for the sharing and transfer of knowledge and experience; and to provide guidance on, and practical examples of good practices in assessing the security of nuclear and other radioactive materials, as well as associated facilities and activities.

2. Organizational Structure

The NUSAM project consists of a series of working groups with oversight provided by a Coordinating Group consisting of working group leaders, led by a chairperson and supported by an IAEA Scientific Secretary. The Group provides oversight, controls the scope of the project and ensures that the objectives of the project are being achieved.

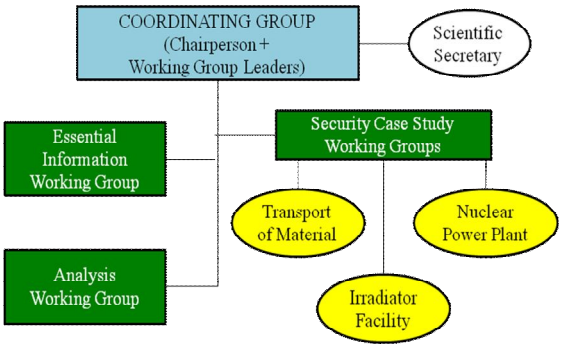

Figure 1: The NUSAM Organizational Structure

3. NUSAM Methodologies

NUSAM methodological framework provides a high level summary of the key steps to be followed when undertaking a security assessment. The framework focuses on the complete risk management cycle that includes planning, collecting required information, conducting assessment, and analysis & documentation. In this framework, various methods were utilized to assess security such as expert judgment, table-top exercise, computer simulation, path analysis, performance testing of technical system, and performance testing of response capability.

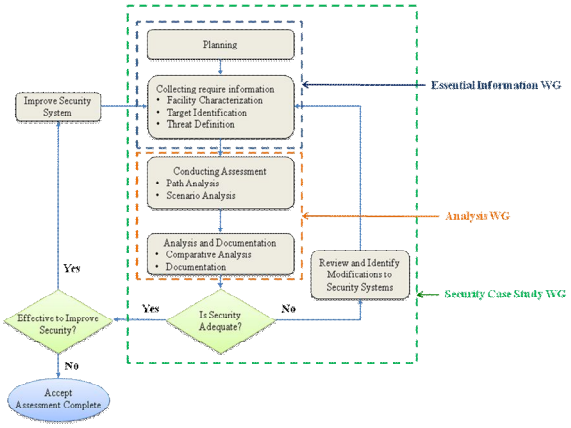

Figure 2 : Methodological Framework

One of the important aspects of NUSAM is the collaborative research on modeling and simulation tools to support nuclear security assessments. The NUSAM is the first forum for IAEA member states to share and collectively evaluate nuclear security assessment methods.

4. Security Case Study : Nuclear Power Plant, Irradiator Facility, Transport of Materials

In order to illustrate the practical application of the methodological framework, three hypothetical cases have developed by dedicated working groups: nuclear power plant, medical irradiator facility, and transport security. The development of security cases will provide a basis for discussion of the many practical issues encountered when undertaking a nuclear security assessment, with the aim of reaching consensus in as many areas as possible.

The case study working groups developed detailed model of the facility/activity, enhanced their model based on information received from the Essential Information and Analysis working groups, and performed security analysis using the methodological framework

Also, each working also interacted with the other groups to resolve any inconsistencies and ensure completeness.

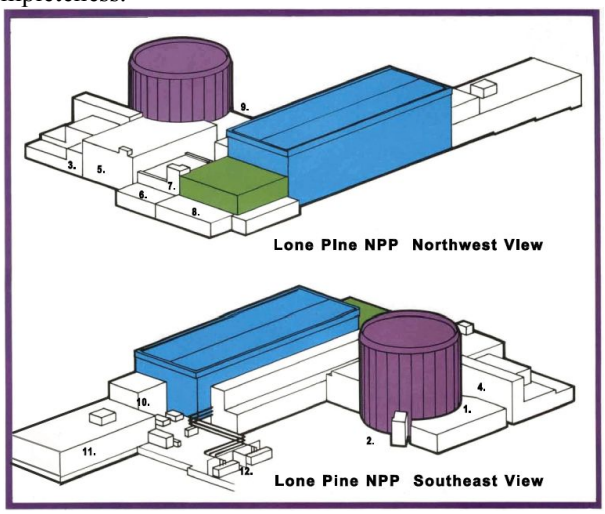

Figure 3 : Hypothetical Nuclear Power Plant for case study – Lone Pine

5. Conclusion

The author worked as an IAEA scientific secretary of the NUAM project from 2013 to 2015. IAEA launched this project in 2013 and performed many activities: meetings, document development, table-top exercises and computer simulations.

Now the project is in the final stage and will be concluded in the late 2016. The project will produce documents on NUSAM assessment methods and case study documents on NPP, Irradiator Facility and Transport.

South Korea as a main contributor to this project will get benefits from the NUSAM. In 2014, South Korea introduced force-on-force exercises, which could be used as the assessment of physical protection system by the methods of NUSAM. The designing of new nuclear power plant could assess its security using the NUSAM methods.

ACKNOWLEDGEMENT

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