Contribution ID: **27** Type: **Oral**

National Nuclear Forensics Library at Japan Atomic Energy Agency

Wednesday 9 July 2014 11:30 (20 minutes)

In 2010, the Japan Government issued the national statement at Nuclear Security Summit (Washington D.C., USA) to develop technologies related to measurement and detection of nuclear materials for nuclear forensics within approximate three-year timeframe, and to share them with the international community, in order to contribute to strengthening the nuclear security system. In response to this statement, Japan Atomic Energy Agency (JAEA) that possesses sufficient analytical capabilities to fulfil this nuclear forensics mission has started R&D on nuclear forensics technology from JFY 2011. One of main topics of the R&D project is to develop national nuclear forensics library (NNFL) and evaluation methodology for interpretation of nuclear material attributions.

Recently, the development of nuclear forensics library has been carried out in some countries and the concept of national nuclear forensics library with point-of-contact is the most popular in current international society [1]. The NNFL project at JAEA also follows this concept. JAEA has continued to develop a prototype system of NNFL based on data related to nuclear materials and other radioactive materials that JAEA has possessed in the past research activities. A concept building of prototype database on nuclear materials and related nuclear fuel cycle facilities was almost completed with its basic data handling system. As the next step of the NNFL project, it is planned to carry out the development items listed below;
- prototype database on other radioactive materials,
- image verification function for microscope images,
- multivaliate analysis function for seizure analysis,
- knowledge accumulation system for nuclear forensics analysis.

Data gathering on nuclear materials in JAEA has been also continued and they will be populated into the prototype nuclear meterials database. It is expected that the NNFL development and its operation al methods will be transferred to the responsible authorities after the national framework of nuclear forensics in Japan will be constructed in the near future.

References
[1] IAEA, Development of a National Nuclear Forensics Library, IAEA Nuclear Security Series (Draft) (2013).

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Session Classification: Technical Session 3C