A study on the establishment of Additional Protocol System at KAERI

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1. Introduction

The AP (additional protocol) is a legal document granting the IAEA (International Atomic Energy Agency) complementary inspection authority to assure the absence of undeclared nuclear material and activities. The ROK (Republic Of Korea) signed the additional protocol in June 1999 and it entered into force in Feb. 2004 when the ROK national assembly was ratified. Under the AP, KAERI has submitted the annual report on the expanded declaration to the IAEA, and the IAEA has carried out the CA (Complementary Access) of the KAERI site since 2004. As you know, our institute has so many facilities and projects that it is very difficult and complicated to report. So, we are building a system for expanded declarations inside the institute. This paper describes the establishment of AP system at KAERI.

2. The Additional Protocol at KAERI

Under the AP, the KAERI has annually submitted a report on expanded declaration to the IAEA, and the IAEA has carried out the CA of the KAERI site to assure the absence of undeclared nuclear material and activities since 2004.

2.1. Expanded Declaration

In the ROK, a report on the expanded declaration under the AP should be submitted to KINAC by 31 March of each year. The KINAC coordinates the ROK AP information and submits it to the IAEA by 15 May. KAERI has submitted the reports on expanded declaration to the KINAC in a timely manner since 2004. The information of the declaration under the AP is as follows:

(1) A general description of and information specifying the location of nuclear fuel cycle-related research and development activities not involving nuclear material carried out anywhere that are funded, specifically authorized or controlled by, or carried out on behalf of the government (Article 2.a.(i) of the AP)

(2) A general description of each building on each site including a map (Article 2.a.(iii) of the AP)

(3) A description of the scale of operations for each location engaged in the activities specified in Annex I to the AP [1] (Article 2.a.(iv) of the AP)

(4) General plans for the succeeding ten-year period relevant to the development of the nuclear fuel cycle (including planned nuclear fuel cycle-related research and development activities) when approved by the appropriated authorities in the government (Article 2.a.(x) of the AP). Nuclear fuel cycle-related research and development activities are those activities that are specifically related to any process or system development aspect of any of the following:

- Conversion of nuclear material,
- Enrichment of nuclear material,
- Nuclear fuel fabrication,
- Reactors,
- Critical facilities,
- Reprocessing of nuclear fuel,
- Processing (not including repacking or conditioning not involving the separation of elements, for storage or disposal) of intermediate or high-level waste containing plutonium, high enriched uranium or uranium-233,

But these do not include activities related to theoretical or basic scientific research or to research and development on industrial radioisotope applications, medical, hydrological and agricultural applications, health and environmental effects and improved maintenance.

2.2. Complementary Access at KAERI

Table 1 shows the status of the CA at KAERI. The IAEA has conducted 42 CAs on the KAERI site since 2004. The CA is for IAEA inspectors to assure the absence of undeclared nuclear material or to resolve questions or inconsistencies in the information a State has provided about its nuclear activities. The IAEA gives an advanced notice of the CA of at least 24 hours to KAERI. The advanced notice is shorter- at least two hours- for access to any place on the KAERI site that is sought in conjunction with the DIV (Design Information Verification) or ad hoc or routine inspections.

IAEA activities such as an examination of records, visual observations, environmental sampling, utilization of radiation detection and measurement devices are conducted during the CA.

Table 1. The status of the CA at KAERI (as of Mar 2017)

	2010	*2011*	*2012*	*2013*	*2014*	*2015*	*2016*
The number of the CA	*2*	*3*	*1*	*3*	*1*	*3*	*3*

3. The Implementation System of AP at KAERI

As you know, our institute has so many facilities and projects that it is very difficult and complicated to report. Since KAERI AP implementation system was designed not only to prepare the expanded declaration efficiently at KAERI but also to meet the requirements established by the IAEA under the AP. All AP information such as the building information at the KAERI site, R&D project information, and the status of the annual expanded declaration can be managed in this system.

KAERI has upgrading it for the sake of user convenience. The experience obtained from the development of the AP implementation system may be helpful in the implementation of the AP at KAERI.

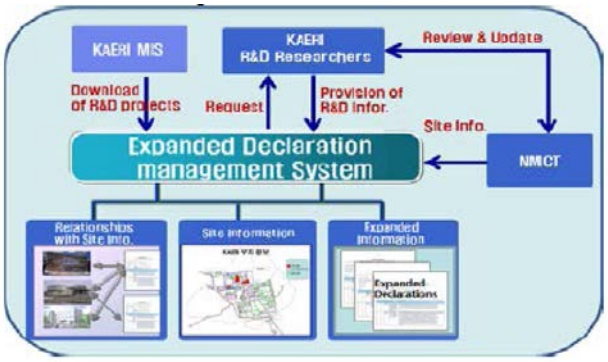

Fig. 1. Schematic Diagram of Expanded Declaration

3.1. 2.a.(i) Research Project

The list of KAERI R&D projects downloaded from the KAERI MIS (Management Information System) is managed in this system. This system notifies all R&D project managers automatically that the project information should be submitted if it needs to be reported under article 2.a.(i), (iv) or (x) of the AP. On the basis on the information the project manager provides, In general, more than 600 projects are reported as projects to report and not to report. When the project name is changed or the research contents change to the contents to be reported, it is added to the system according to the judgment of the project manager. It is linked to the report of 2.a. (iii), depending on which buildings the projects are undertaken.

3.2. 2.a.(iii) Building Information

With regard to building information, this is obtained in two ways. One gets information from walking around the institute, and secondly from the relevant departments. Then enter the information into the system and it will automatically link with AAA related projects. You will know which projects perform in which building. Since the system is still a pilot operation, we are checking the system for errors and missing parts in parallel with the manual operation.

3.3. Pros and Cons

The advantage of the system is that the system processes it, which reduces human errors and missing parts. In fact, we have been helped by the system in piloting this year. The only disadvantage is the project managers should make their own decisions as to whether or not their project is an extension report. However, if a PM is not fully aware of the extension report, it is considered necessary to have a system that can automatically validate projects.

4. Conclusions

The AP implementation system developed by KAERI was designed not only to prepare the expanded declaration efficiently at KAERI but also to meet the requirements established by the IAEA under the AP. The system is currently being updated, and if there is still difficulty, but the system can be trusted even if it is developed to a good level, it will be possible to shorten the time to write the report and increase the reliability. The experience obtained from the development of the AP information management system may be helpful in the efficient implementation of the AP at KAERI.

KAERI will make continuous efforts to implement the AP efficiently, as well as meet the requirements established by the IAEA under the AP.

REFERENCES

[1] Model protocol additional to the agreement(s) between state(s) and the international atomic energy agency for the application of safeguards, Annex I
[2] Model protocol additional to the agreement(s) between state(s) and the international atomic energy agency for the application of safeguards, p14