

The upgrade of nuclear material accounting system at KAERI

Hyun-Jo Kim, Hyun-Sook Kim, Ho-Jun Park, Han-Suk Ko, Byung-Doo Lee
Korea Atomic Energy Research Institute, 150-1 Deokjin-dong, Yuseong-gu Daejeon, 305-353
keiki@kaeri.re.kr

1. Introduction

The agreement between the government of Republic Of Korea (ROK) and the IAEA for the application of safeguards was signed and entered into force in 1975.

The Additional Protocol (AP) to the Safeguards Agreement between the ROK and the IAEA was signed in 1999 and entered into force on 19 February 2004. Also, Implementation of Integrated Safeguards (IS) was started on 1 July, 2008 after a draw of the broader conclusion.

The IAEA provides 2 hours notification for Random Interim Inspection (RII) under IS. For RII, the facility has to prepare the inspection documents in a short time.

Therefore, KAERI (Korea Atomic Energy Research Institute) developed a new computerized nuclear material accounting system named KASIS (KAERI Safeguards Information treatment System) to treat the data by on-line for RII.

For the efficient IS implementation, KAERI has a plan to upgrade the system to reflect the accounting approaches or reporting procedure according to facility characteristic.

This paper describes the upgrade of the nuclear material accounting system and the efforts to reduce the burden of the facility operators.

2. Structure of KASIS

KASIS is developed to meet the obligations under the ROK-IAEA safeguards agreement, bilateral agreements with other countries and domestic laws.

The authority level of KASIS is divided facility operator level and safeguards management level. In the facility operator level, facility operators input the inventory changes such as re-bating (RM/RP) and nuclear material transfer and in the safeguards management level, the members of Nuclear Material Control Team (NMCT) review the inventory changes and generate the accounting reports such as Inventory Change Report (ICR), Physical Inventory List (PIL), Material Balance Report (MBR) as well as ledger for inspection.

Facility operators and NMCT can access to KASIS on the network. Figure 1 shows network environment of KASIS.

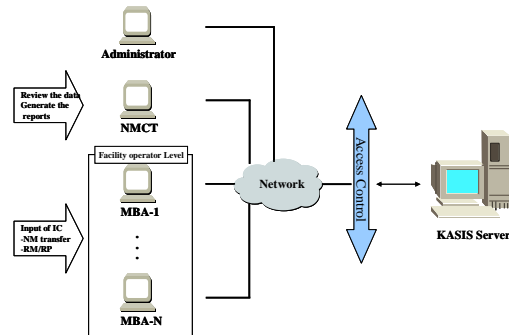


Fig. 1. The network environment of KASIS

3. Needs to upgrade of KASIS

2.1 Report based on facility categorization

KAERI has maintained batch follow-up procedures for all nuclear facilities at KAERI, because of maintenance of current inventory status for RII. Therefore, unnecessary re-batching reports such as batch change during processing at bulk handling facility or extraction of small samples from large batches for analysis are increased. It causes the big burden to facility operators because they input the inventory change such as re-batching and transfer of nuclear material in the system.

To resolve this issue, KAERI will classify all nuclear facilities into the item counting and bulk handling facilities, and report the nuclear material accounting based on the categorization.

2.2 Integration of KASIS and RFID

The facility operators must input data on nuclear material transfer into RFID (Radio Frequency IDentification) system which was managed by health physics team as well as KASIS.

To reduce the burden of the facility operators, KAERI has a plan to integrate KASIS with RFID system.

2.3 Integration of facility's own system and KASIS

HANARO Fuel Fabrication Plant (HFFP) has its own computerized accounting system to treat quality control data as well as accounting data. So, the operators of HFFP have to input the data into the 3 different systems which are their own accounting system, RFID, and KASIS.

Therefore, it is need to integrate facility's own accounting system with KASIS to avoid input into the systems separately.

4. Conclusions

The paper reviewed the current status and need to upgrade of KASIS.

It is expected that the upgrade of KASIS will be very helpful to the facility operators by reducing the burden such as unnecessary re-batching and duplicated input into the system.

Also, KAERI will make continuous efforts to accommodate the facility operator's convenience and to meet the requirements of international agreements and domestic laws as well.

REFERENCES

- [1] IAEA, "Nuclear Material Accounting Handbook", Services series 15, May 2008.
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