Advanced Nuclear Fuel Cycles and Safeguards

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1.Outline

- Introduction
- Japan's Experience – Advanced Nuclear Fuel Cycles and Safeguards
- Key elements for the future of the IAEA Safeguards
- Conclusion

2. Introduction

- "**Safeguards are a core mission of the IAEA and will continue to be a central part of its work**", as described in the report of the Commission of Eminent Persons on the Future of the IAEA.
- Strengthening IAEA safeguards is essential in order to strengthen the nuclear non-proliferation regime.

Most realistic and effective way

Universalization of the Additional Protocol

3. Japan's Experience – Advanced Nuclear Fuel Cycles and Safeguards

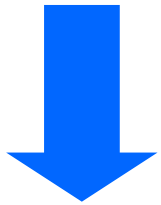
（1）In promoting the nuclear fuel cycle, Japan has taken measures such as:

- Maintaining the principle of posessing no plutonium of unspecified purpose;
- Ensuring a maximum level of transparency with a view to further enhancing understanding and confidence, both in Japan and abroad, on the fundamental stance that nuclear material, including plutonium, will be used solely for peaceful purposes in Japan

3. Japan's Experience – Advanced Nuclear Fuel Cycles and Safeguards (cont'd)

(2) Unique technical measure:

・Producing a mixed oxide of plutonium and uranium **(MOX)** at the Rokkasho Reprocessing Plant



No pure plutonium oxide substance

3. Japan's Experience – Advanced Nuclear Fuel Cycles and Safeguards (cont'd)

(3) Three Non-Nuclear Principles: not possessing, not producing and not permitting the introduction of nuclear weapons into Japan

(4)Stringent physical protection measures and export control regulations, as well as the highest level of safeguards including the Additional Protocol

(5)The conclusion of the multinational examination of Large Scale Reprocessing Plant Safeguards (LASCAR, 1988-1992) has been reflected in the development of the safeguards measures applied at the Rokkasho Plant.

Large Scale Reprocessing Plant Safeguards (LASCAR)

- The International consultive forum from 1988 to 1992 studied effective and efficient Safeguards for large scale reprocessing plants
- USA, UK, France, Germany, Japan, IAEA and EURATOM

Effective and efficient safeguards have been implemented, with an appropriate combination of current and advanced safeguards techniques.

Safeguards approach for RRP

➢Based on LASCAR findings, an effective and efficient safeguards system has been developed in consultation with the IAEA.

■Near Real-Time Accountancy System

■Advanced Safeguards Systems, such as remote monitoring, computer data acquisition and transmission

■24- hour inspector presence, and an on-site Laboratory

Other advanced nuclear facilities

JNFL MOX Fuel Fabrication Plant (J-MOX):

- The Licensing Application for MOX Fuel Fabrication: under safety assessment by the safety authorities
- Integrated Safeguards approach for J-MOX is under discussion

Rokkasho Enrichment Plant:

- Limited Frequency Unannounced Access

Key elements for the future of the IAEA Safeguards

Five key elements:

- Universalization of the Additional Protocol;
- Providing credible verification through independent analysis of safeguards samples obtained by the IAEA;
- Safeguards by Design from the earliest possible stage;
- Pursuing integrated safeguards;
- International Cooperation.

Key elements for the future of the IAEA Safeguards①

Universalization of the Additional Protocol : International confidence and a maximum level of transparency)

"to increase confidence that no nuclear material has been diverted from declared sites and that there is no evidence of clandestine nuclear activities elsewhere"

As described in the report of "The role of the IAEA to 2020 and Beyond"

"without the AP, the Agency cannot provide credible assurance regarding the absence of undeclared nuclear material or activity."

"The DG's statement to the 51st session of the IAEA GC"

Diplomatic Efforts by Japan for strengthening the IAEA Safeguards

- The Universalizaiton of the Additional Protocol is the most realistic and effective way to strengthen the non-proliferation regime.
- Peaceful use of nuclear energy should be promoted in a manner consistent with the highest level of safeguards standards.

Comprehensive safeguards agreement
+
Additional Protocol

- Increasing the transparency of States' nuclear related activities
- Providing the IAEA with an enhanced verification capacity.

Diplomatic Efforts by Japan: Outreach activities for the universalization of additional protocol

➢**The importance of outreach activities through cooperation with the IAEA and its Member States.**

Examples:

- **Asian Senior-level Talks on Non-proliferation (ASTOP) (Tokyo),** 2003, 2005, 2006, 2007, 2008
- **IAEA Regional Seminar (Sydney)**
- **National Seminar on the Additional Protocol (Vietnam),** August 2007
- **3S Seminar (Vietnam)**, August 2008

Key elements for the future of the IAEA Safeguards②

Independent analysis of safeguards samples by the IAEA

"Essential to provide credible verification of the non-proliferation of nuclear weapons"

As described in the report of "The role of the IAEA to 2020 and Beyond"

Japan made an extrabudgetary contribution to strengthen the Safeguards Analytical Laboratory

Key elements for the future of the IAEA Safeguards③

Safeguards by design,
from the earliest possible stage

"Effective safeguards measures can be designed into such new systems from the outset."

As described in the report of "The role of the IAEA to 2020 and Beyond"

To maximize the effectiveness of the safeguards system and minimize the cost and potential impacts on facility operators

Key elements for the future of the IAEA Safeguards④

Pursuing integrated safeguards

Streamline traditional safeguards while ensuring international confidence and maintaining a maximum level of transparency

Reallocation of available resources to other activities, including analysis of information

Key elements for the future of the IAEA Safeguards⑤

International Cooperation

-The NEXT Generation Safeguards Initiative
- The Asia-Pacific safeguards association
- IAEA support programmes (JASPAS, etc)

To complement the IAEA safeguards system in terms of:①Technology; ②Infrastructure; ③Human Resources

Conclusion

States including Japan, which have advanced nuclear fuel cycles, are required to:

- **ensure international confidence;**
- **maintain a maximum level of transparency;**

through the application of the highest level of IAEA safeguards including the Additional Protocol.