



Nonproliferation and Nuclear Security

*Regional Seminar on
Facts of Nuclear Power for Electricity Generation
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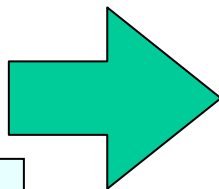
Japan Atomic Energy Agency (JAEA)

About JAEA - Integration of JAERI & JNC

October 2005

Special Public
Institutions

Independent
Administrative
Institution



JAERI

Basic Research of Atomic Energy, Nuclear Energy System, Neutron Science, Nuclear Safety, Radiation Utilization, Fusion...



JNC

R&D for Nuclear Energy Utilization, FBR, Spent-Fuel Reprocessing, Fuel Fabrication, Rad-Waste Treatment & Disposal...



JAEA

Institute is synthesized & organized for full-scope R&D from basic research to commercialization of Nuclear Energy

Employees - 4,386

**Budget for the first 4.5 years
- 891.3 B¥**

About JAEA - Broad-Scope Missions

Long-term energy security
countermeasures to
environmental problems

**Establishment of nuclear fuel
cycles**

(FBR cycle, HLW, Tech. support of LWR cycle)

**Contribution to hydrogen economy
by nuclear process heat**

Creation of advanced science
and technology
with competitive edges

**Research and development of
nuclear fusion energy**

Quantum beam technology
(Quantum beam user platform)

Activities on securing safety and
security

Research on nuclear safety

**Nonproliferation & safeguards
technology**

**Decommissioning of our nuclear
facilities, Processing of waste disposal**

**Cooperation with academic world and
industry, International collaboration,
Human resource development, Atomic
energy information**

Common bases of science and technology

Basic nuclear engineering research and advanced basic research

Promotion of the Peaceful Use of Nuclear Energy

Nuclear Nonproliferation

Measures to ensure international confidence

Nuclear Security (Physical Protection)

Measures to protect health and environment



Economy

Measures to get public acceptance

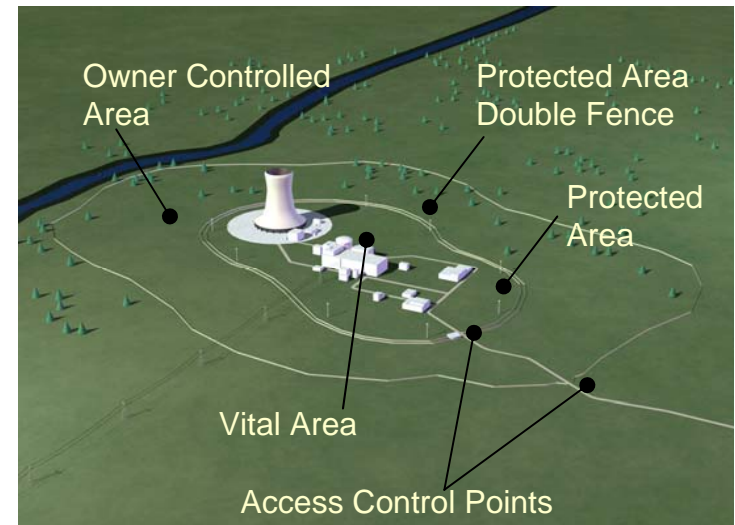
Safety

Nonproliferation and Nuclear Security



Nuclear Nonproliferation: To curb and prevent the spread of nuclear weapons, their delivery means, and related materials and technologies.

Nuclear Security: The prevention and detection of and response to theft, sabotage, unauthorized access, illegal transfer or other malicious acts involving nuclear material, other radioactive substances, or their associated facilities.



Nuclear Nonproliferation

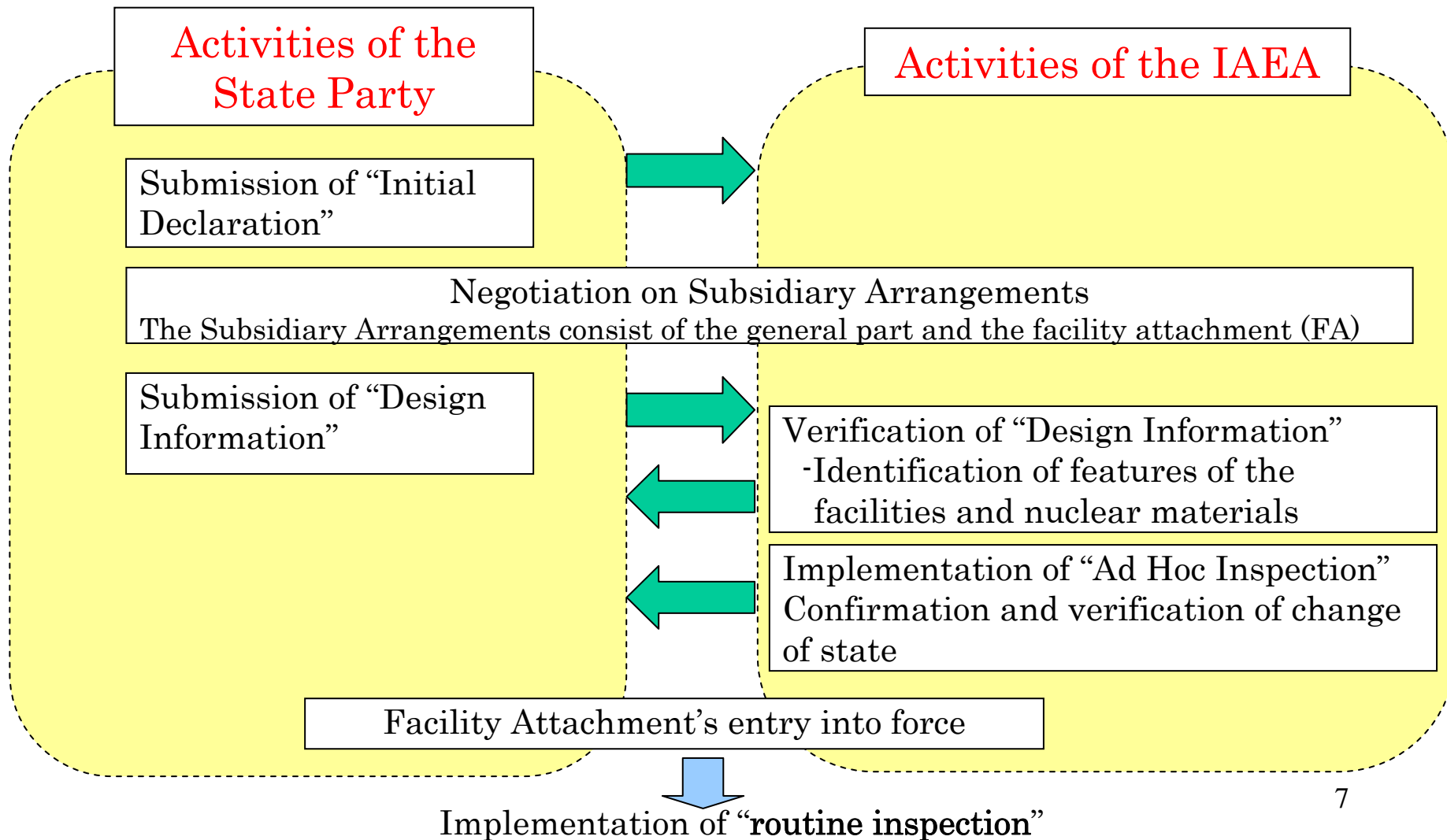
The Treaty on the Non-proliferation of Nuclear Weapons (**NPT**), concluded in 1968 and entered into force in 1970, prohibits any country other than the five existing nuclear weapons states from possessing nuclear weapons



while ensuring peaceful use of nuclear energy by non-nuclear-weapon states under the International Atomic Energy Agency (IAEA) **safeguards**.

Safeguards-Related Activities

Starts When State Signs NPT Safeguards Agreement



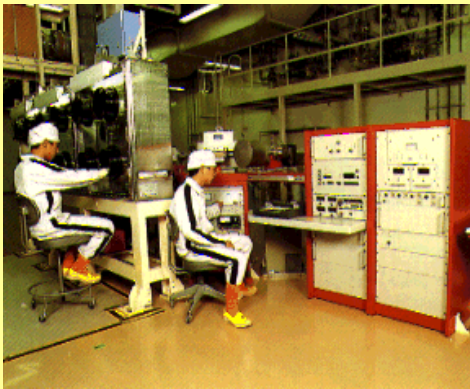
Safeguards-Related Activities

During the Operation of Nuclear Facilities

Activity of the State Party

Keeping of “Records” of data including changes in nuclear material inventory

Submission of “Reports” on changes in nuclear material inventory, etc.



Activities of the IAEA



Implementation of “Routine Inspection”

- To verify “Reports” are consistent with the “Records”
- To verify the location, identity, quantity and composition of the nuclear materials
- To verify information on the possible factors of “Inventory” and other data

Application of containment and surveillance

Notification of results and conclusions of the “Routine Inspection”

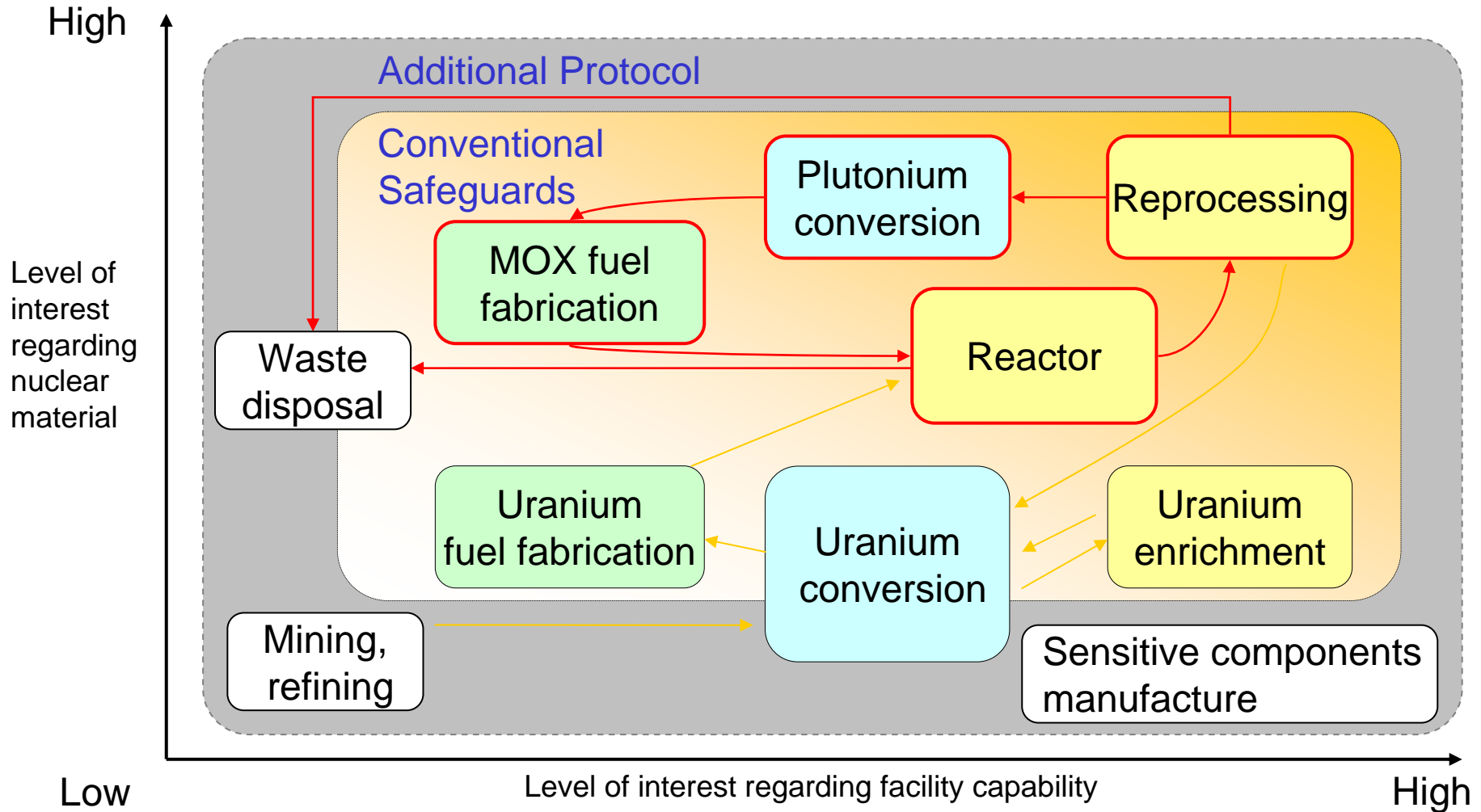
Strengthened Safeguards Initiated after the First Gulf War

The long-standing concern that the IAEA's comprehensive safeguards agreements would not be capable of detecting undeclared nuclear materials or nuclear activities became apparent when Iraq's secret nuclear weapon development program was revealed after the first Gulf War. In response to this issue, a program to strengthen the IAEA's safeguards and enhance their efficiency, "program 93+2" was drawn up.

Part 1 – Strengthen safeguards using existing measures more effectively

Part 2 – Strengthen safeguards under "Additional Protocol"

Safeguards for Nuclear Fuel Cycle Facilities




→ Uranium Change of physical form Change of chemical form Separation, extraction and generation Pu handling facility

Japanese Commitment to Peaceful Use of Nuclear Energy

- 1955** Established Atomic Energy Basic Law
- 1957** Established Law for Regulation of Nuclear Source Material, Nuclear Fuel Material, and Reactors
- 1967** Policy Guideline “Three Non-Nuclear Principles”
- 1976** Ratified the NPT
- 1977** Entered into force Comprehensive Safeguards Agreement
- 1999** Entered into force Additional Protocol

Framework of Japanese Law Related to Safeguards



The Treaty on the Non-proliferation of Nuclear Weapons (NPT)



Bilateral Nuclear Energy Cooperation Agreement



Comprehensive Safeguards Agreement

Additional Protocol



Major Domestic Laws (Regulations)

- ✧ **Atomic Energy Basic Law**
- ✧ **The Law for the Regulations of Nuclear Source Material, Nuclear Fuel Material and Reactors**
- ✧ **Rules for the Use of the International Controlled Materials**

Japan Qualified for Integrated Safeguards

- IAEA reached the Conclusion in June 2004: “Neither diversion of nuclear materials nor undeclared nuclear materials/activities in Japan”
- Integrated Safeguards started in Japan from Sept. 2004, as the first non-nuclear-weapon state with full-scale nuclear fuel cycle



“I am pleased to note that Japan has become the first State with an advanced nuclear cycle to qualify for integrated safeguards”

Statement by IAEA Director General El Baradei to 2004 IAEA General Conference (20 September 2004)

Objectives of Nuclear Security

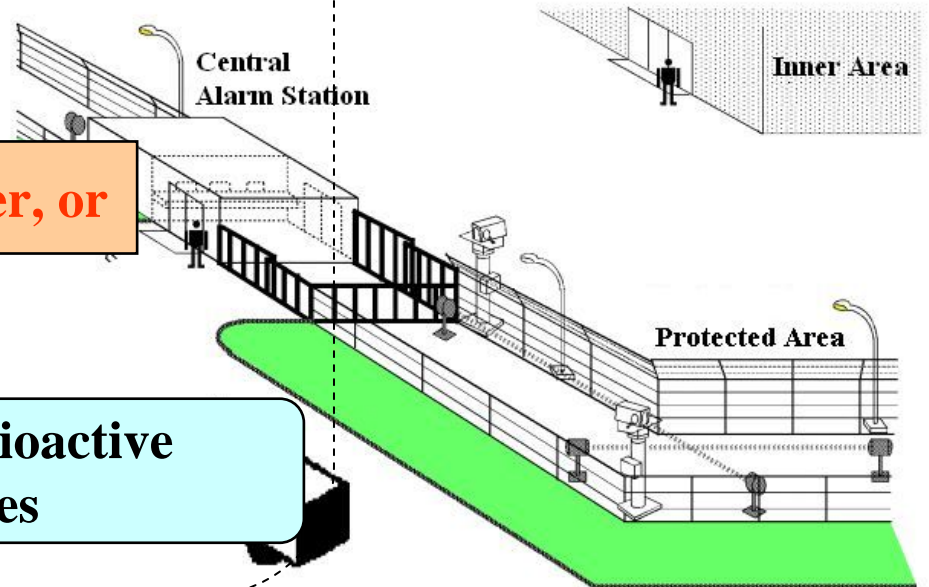
The prevention and detection of and response to

Theft and Sabotage

Unauthorized access, illegal transfer, or

Other malicious acts

Involving nuclear material, other radioactive substances, or their associated facilities



Countermeasures

Early detection

Immediate notification to the response force

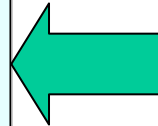
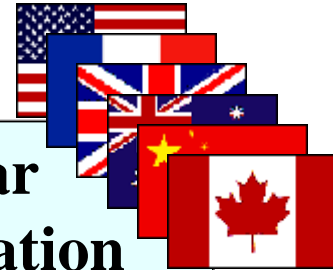
Securing adequate access time delay before the arrival of the response force

Framework of Japanese Law Related to Nuclear Security



**IAEA Recommendations
(INFCIRC/225/Rev.4)**

**Bilateral Nuclear
Energy Cooperation
Agreement**



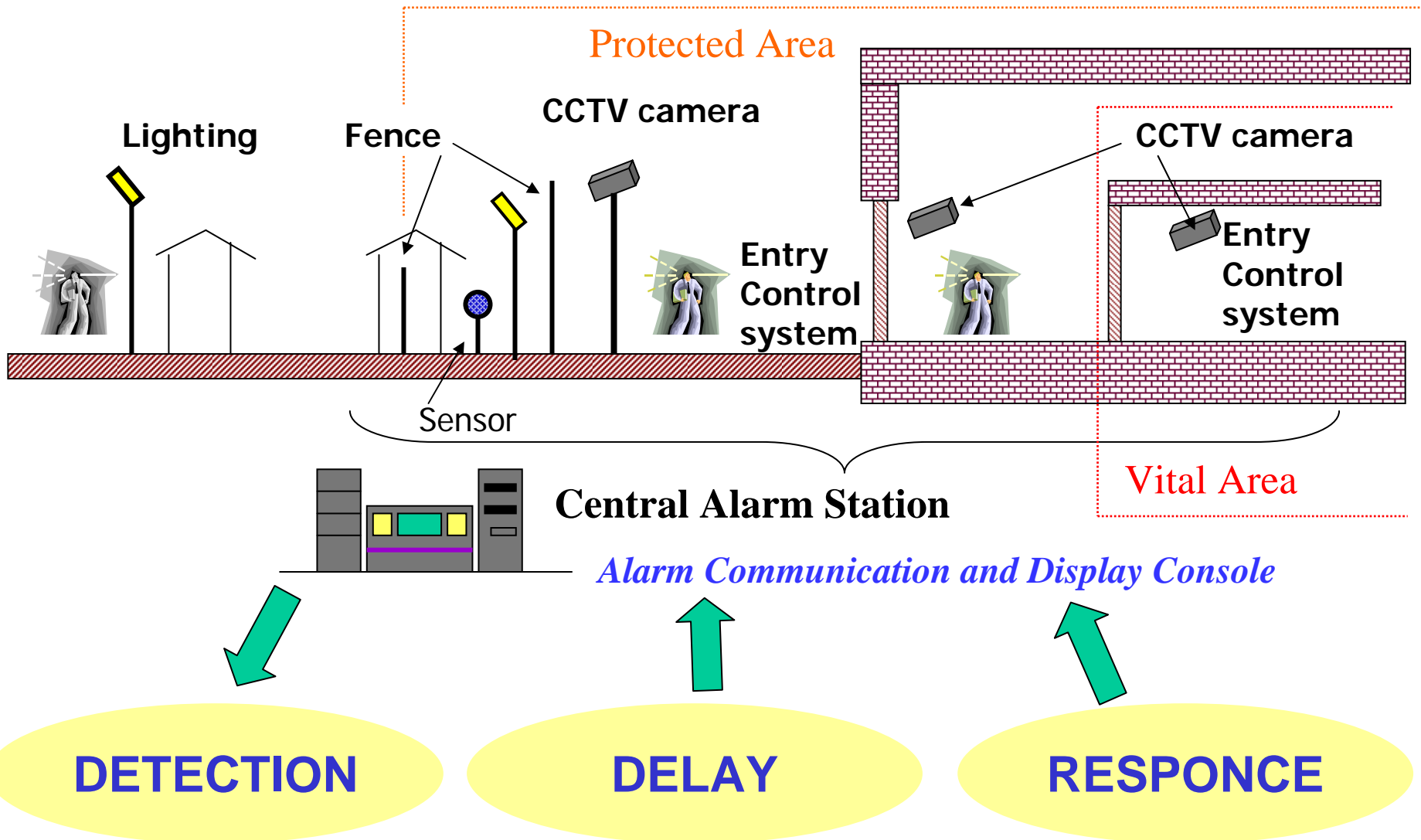
Major Domestic Laws (Regulations)

- ✧ **The Law for the Regulations of Nuclear Source Material, Nuclear Fuel Material and Reactors**
- ✧ **Ships Safety Law**
- ✧ **Civil Aeronautic Law**

**Convention on the Physical Protection of
Nuclear Material (February 1987)**



Concept of Physical Protection



Upgrade of Physical Protection in Japan

The Nuclear Regulation Law was amended to reflect INFCIRC/225/Rev.4 and enforced in December 2005

- Clarification of Design Basis Threat (DBT)
- Protection of classified Physical Protection information
- Introduction of Physical Protection Inspection and evaluation
- Strengthen physical protection requirement during transportation
- Strengthen communication between response force
- Counter-measure against an internal (“insider”) threat

Conclusion

- Nuclear nonproliferation and nuclear security are important aspects to promote the peaceful use of nuclear energy
- Compliance with nuclear nonproliferation norms and adequate physical protection measures will help ensure international confidence in nuclear energy development and use
- Japan is an active participant in nonproliferation and supports cultivating a nonproliferation culture in Asia