



BADAN PENGAWAS TENAGA NUKLIR
Indonesian Nuclear Energy Regulatory Agency



Nuclear Security Regulatory Framework in Indonesia

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Agenda

- **Part A: Legal bases**
 - Hierarchy of law; Ratified international instruments; Amendment plan; Licensing requirements on security.
- **Part B: Licensing process**
 - Licensee profiles; Authorization; Information system; Licensing for radiation facility and radioactive materials; Nuclear installations; Licensing for nuclear installation and materials.
- **Part C: Inspection and Eforcement**
 - Countrywide inspection program; Types of RFRM inspection; Inspection at nuclear installation; Enforcement.
- **Part D: Out of Regulatory Control**
 - The National Legislation Implementation Kit on Nuclear Security (NLIK); Nuclear Security Act (Draft)



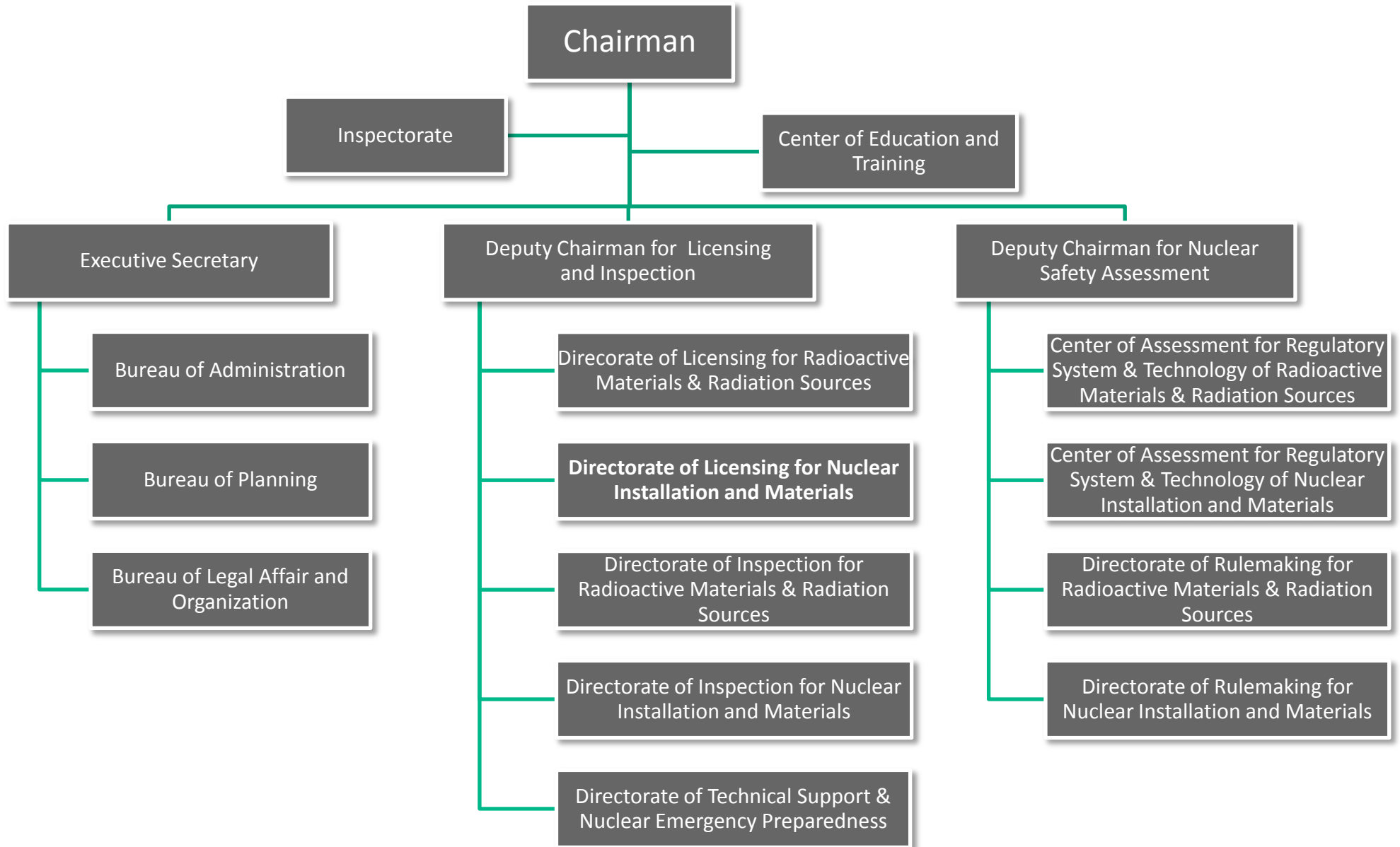
Part A

Legal bases

- Organizational chart of BAPETEN
 - Hierarchy of law;
- Ratified international instruments
 - Amendment plan
- Licensing requirements on security

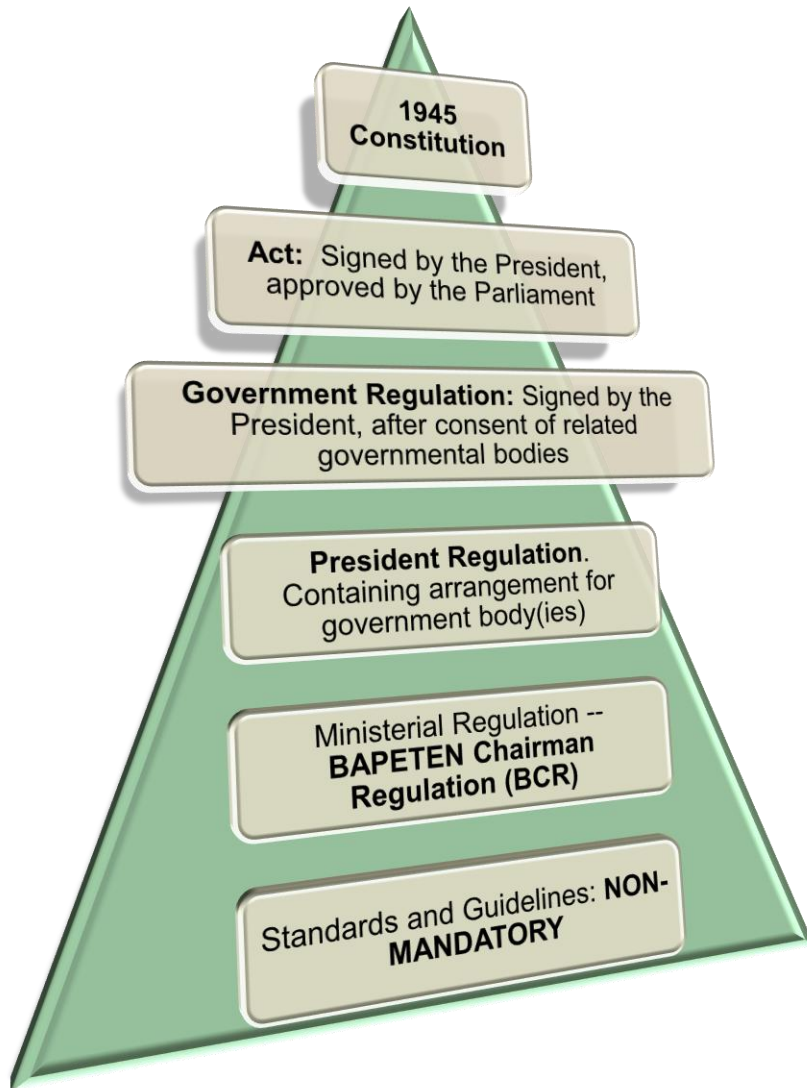


Organizational Chart of BAPETEN





Hierarchy of Law



- **Act No. 10/1997 on Nuclear Energy.**
- GR No. 2/2014 on the Licensing of Nuclear Installation and the Utilization of Nuclear Materials
- GR No. 61/2013 on Radioactive Waste Management;
- GR No. 54/2012 on the Safety and Security of Nuclear Installations;
- GR No. 46/2009 on the Liability of Nuclear Damages;
- GR No. 29/2008 on the Licensing of Ionizing Radiation Sources and Nuclear Materials.
- GR No. 33/2007 on the Safety of Ionizing Radiation and Security of Radioactive Sources. (adapting the IAEA BSS-115).
- GR No. 26/2002 on the Transport Safety of Radioactive Materials (to be amended soon);
- BCR No. 1/2009 on the Provision of Physical Protection of Nuclear Installation and Materials
- BCR No. 7/2007 on the Security of Radioactive Sources.
-



Ratified International Instruments

- Nuclear Non-Proliferation Treaty (**NPT**). Ratified: Act No 8/1978;
- The Southeast Asia Nuclear Weapon Free Zone Treaty (SEANWFZ). Ratified: President Regulation (PR) No. 9/1997;
- IAEA Safeguards Agreement in force 14 July 1980. Additional Protocol: 29 September 1999;
- Convention on the Physical Protection of Nuclear Material. Ratified: PR No. 49/1986; and **Amendment to the Convention on the Physical Protection** of Nuclear Material. Ratified: PR No. 46/2009;
- Comprehensive Nuclear Test Ban Treaty (**CTBT**). Ratified: Act No. 01/2012
- International Convention for the Suppression of Acts of Nuclear Terrorism (ICSANT). Ratified: Act No. 10/2014;
- **Nuclear Safety Convention**. Ratified: PR 106/2001
- **Joint convention** on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management. Ratified: PR 84/2010
- Convention on **Early Notification** of a Nuclear Accident. Ratified: PR No. 81/1993; and Convention on **Assistance** in the Case of a Nuclear Accident or Radiological Emergency. Ratified: PR No. 82/1993;



Amendment plan

- **Amendment of GR No. 26/2002 on the Safe Transport of Radioactive Material**
 - **Transport security;**
 - Has been submitted to the State Secretary Office for signature by the President.
- **Amendment of BCR No. 7/2007 on the Security of Radioactive Sources**
 - Based on:
 - Experiences in implementation of regulation
 - Feedback from licensee and other stakeholders
 - IAEA NSS No. 9, NSS No. 11, NSS No. 14, etc.
 - Final draft will be signed by Chairman of BAPETEN this year
- **Amendment of GR No. 33/2007 and GR No. 29/2008**
 - Drafting starts in 2015



Licensing Requirements on Security

GR No. 29/2008 on the Licensing of Ionizing Radiation Sources and Nuclear Materials

- Security program;
- Security guard;
- Security equipment;
- Security verification.

GR No. 2/2014 on the Licensing of Nuclear Installation and the Utilization of Nuclear Materials

Physical Protection Plan:

- Design Bases Threat (DBT);
- Security personnel;
- Detection system; and
- Nuclear material category.

BCR No. 7/2007 on the Security of Radioactive Sources

- Mechanism of export-import approval;
- Administrative requirement;
- Management requirement;
- Technical requirement;
- Recording.

BCR No. 1/2009 on the Provision of Physical Protection of Nuclear Installation and Materials

- DBT;
- Personnel;
- Nuclear Material Category;
- Detection System;
- Physical Barrier System.



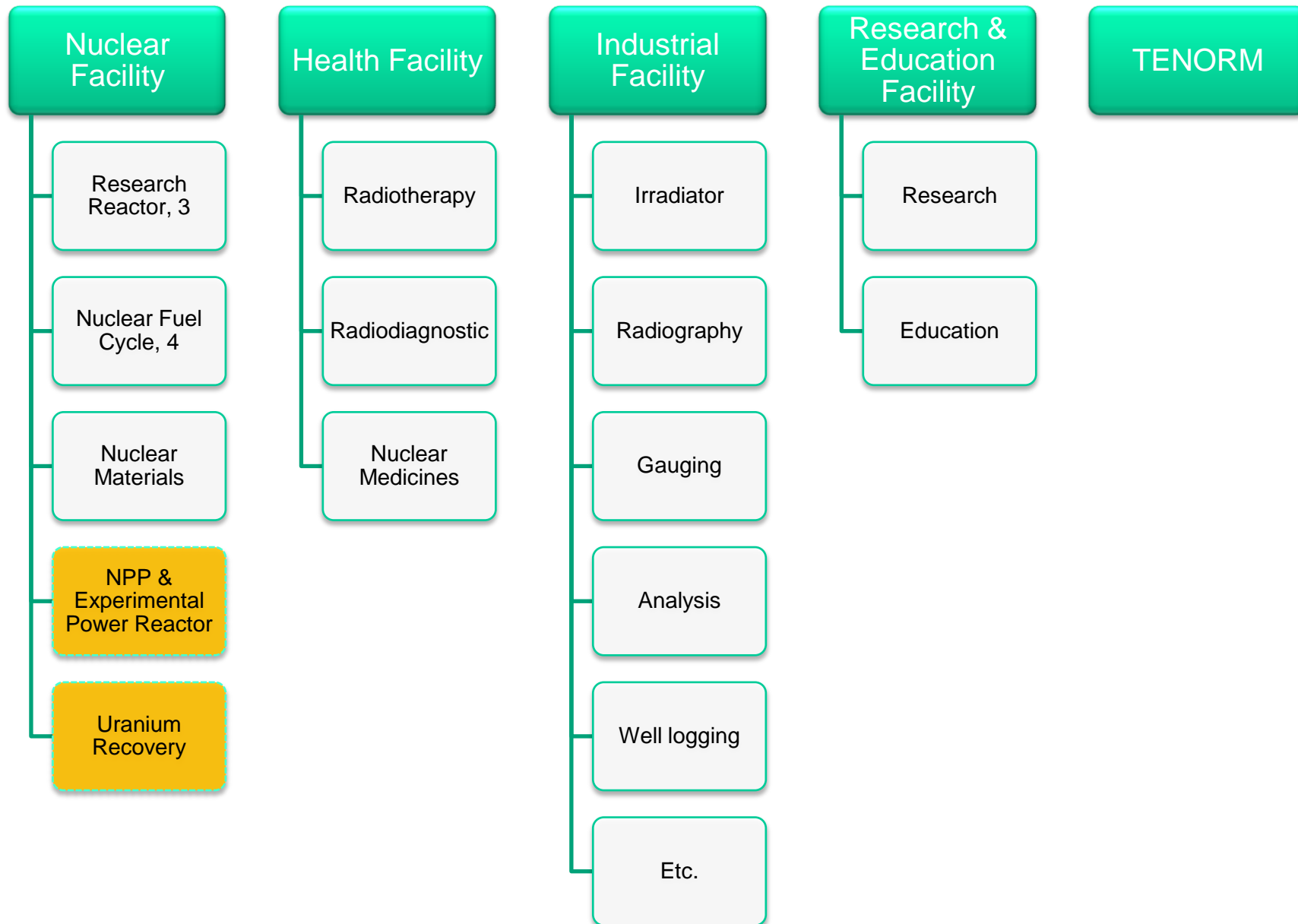
Part B

Licensing Process

- Licensee profiles
 - Authorization
- Information system
- Licensing for radiation facility and radioactive materials
 - Nuclear installations
- Licensing for nuclear installation and materials



Licensee profiles





Authorization

- Licenses:
 - Facilities: Nuclear installation, Irradiator, Radiotherapy, Nuclear medicine
 - Nuclear materials
 - Radiation sources and radioactive materials
 - Personnel licenses: RPO/RSO, Reactor Operator, Reactor Supervisor, Sources/Nuclear Security Officer, Safeguards Officer, etc.
- Approvals:
 - Transport of radioactive materials
 - Modification of nuclear installation
 - Reactor design
 - Etc.
- Statements:
 - Facility closure
 - Clearance
 - Etc.



Principles

- **Transparency and Openness:**
 - Based on Act No. 14/2008 on the Freedom of Information (FOIA);
 - Public hearing process for all level regulation development;
 - All licensing procedures, requirements, and forms are available in the website;
 - Comments & suggestions can be addressed through website;
 - National safety performance annual report;
 - Regulatory guidance process in licensing; ...
- **Impartiality:**
 - Enforcement in accordance to the legal system, both for government and private facility.
- **Accountability:**
 - Annual accountability report;
 - Annual performance and financial audit by the Audit Board of the Republic of Indonesia (BPK-RI).



Information system

- Authorization/licensing process are conducted through an information system called “B@LIS” (BAPETEN Licensing and Inspection System):
 - Multi-tasking web based database system.
 - Equivalent to the IAEA RAIS.
- The B@LIS Export/Import is on-line with the Indonesian National Single Window (NSW):
 - Connected with the Customs;
 - Approval process can be done within 2 hours.
- Licensing fees are paid through a national bank.



RFRM Grouping

Group A	Group B	Group C
<p>I. Ionizing Radiation Sources</p> <ul style="list-style-type: none"> a. Export of RA sources b. Import and transfer of RA sources and/or ionizing radiation generator for medic c. Import of RA Sources for non-medic d. Transfer of RA and/or ionizing radiation generator for medic e. Transfer of RA and/or ionizing radiation generator for non-medic f. Production of ionizing radiation generator g. Production of consumer goods with RA h. Utilization and/or RND in: <ul style="list-style-type: none"> 1. Diagnostic Radiology and Interventional 2. Irradiator w/ sealed sources and radiation ionizing generator 3. Gauging w/ high activity RA sources 4. Industrial Radiographic w/ open and closed facility 5. Well logging; 6. Tracers; 7. Photofluorography; 8. Radiotherapy; 9. Calibration facilities; 10. Nuclear Medicine for Diagnostic in Vivo and Therapy; 11. 17. Nuclear medicine for therapy i. Radioisotope Production j. RA Waste Management 	<ul style="list-style-type: none"> a. Import, export and/or transfer of equipment with RA b. RA sources storage c. Utilization and/or RND on : <ul style="list-style-type: none"> 1. Diagnostic In Vitro Nuclear Medicine 2. Baggage fluoroscopic 3. Gauging w/ low activity 	<ul style="list-style-type: none"> a. Export of radiation ionizing generator b. Import of radiation ionizing generator for medic c. Import of radiation ionizing generator for non-medic d. Utilization and/or RND of RA sources for : <ul style="list-style-type: none"> 1. Educational, research and development 2. Check sources 3. Calibration 4. Standardization 5. Explosive detector
<p>II. Nuclear Materials: R&D, mining/recovery, manufacturing, production, storage, transfer, import & export, uses.</p>	<p>GR No. 29/2008 on the Licensing of Ionizing Radiation Sources and Nuclear Materials</p>	

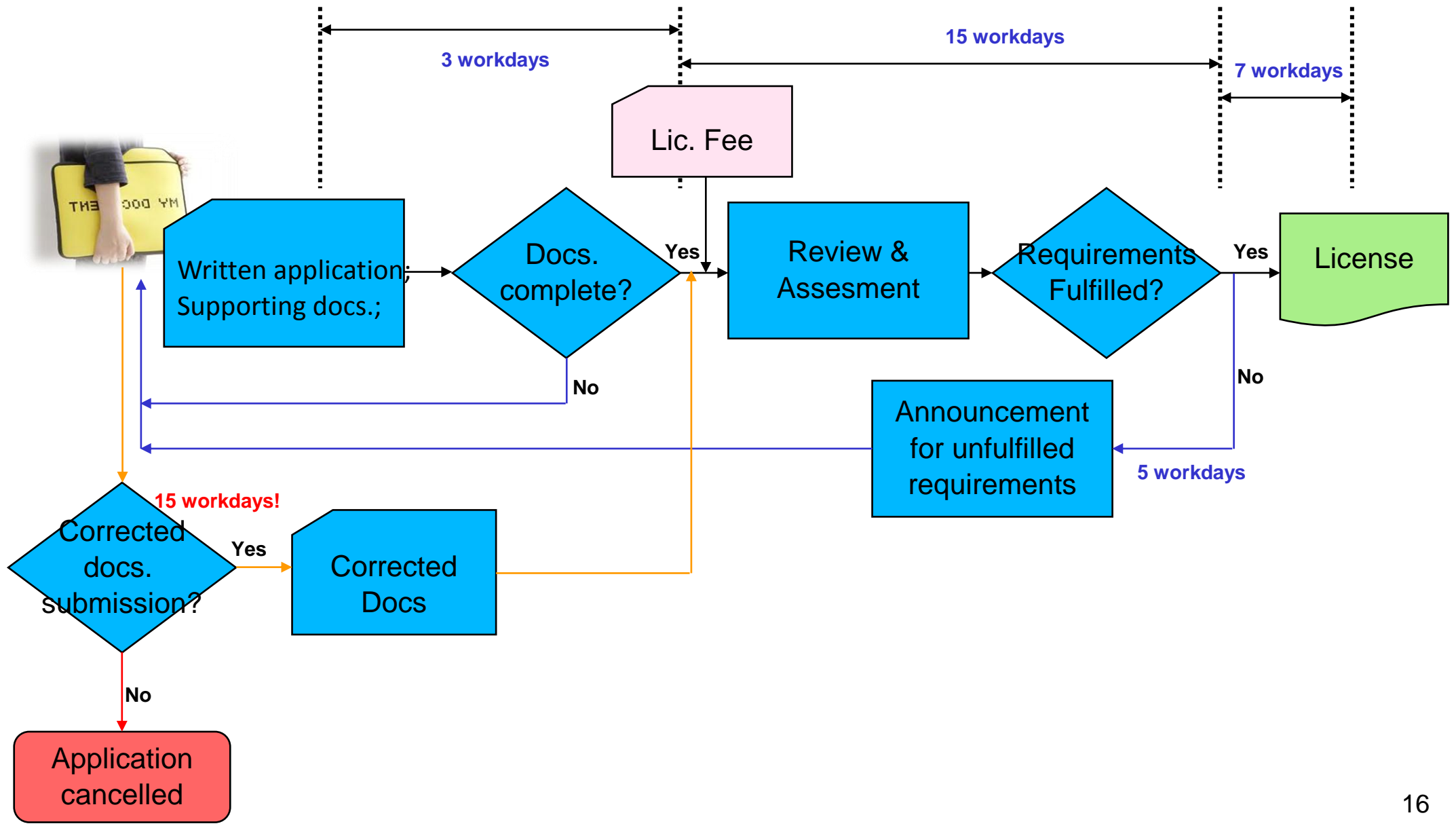


RFRM licensing requirements

Administrative	Technical	Special/Additional
<ol style="list-style-type: none"> 1. Identity of the applicant; 2. Legal status; 3. Other license/requirements from other related authority; and 4. Location of the utilization. 	<p>RFRM:</p> <ol style="list-style-type: none"> 1. Operating procedure(s); 2. Technical specification; 3. Radiation protection and/or radioactive sources security equipment; 4. Radiation Protection and/or Radioactive Sources Security Program; 5. Radiation protection and/or radioactive sources security verification reports; 6. Report of personnel medical checkup; & 7. Personnel qualification for RPOs, Operators and Security Officers. 	<p>Applied to :</p> <ol style="list-style-type: none"> 1. Siting: Seismicity, Flooding; 2. Construction: Design, technical specification; 3. Commissioning; 4. Operation: QAP and/or technical specifications; 5. Closure: Final condition report.
	<p>Nuclear Materials: Safeguards System; Security of NM System; and/or Applicant statement that export/import activity is done with foreign partner country that is: NPT Party, and in Safeguards Agreement with the IAEA</p>	
<p>Applied to all Group.</p>	<p>All requirements are applied to Group A; Selected requirements are applied to Group B and few to Group C.</p>	<p>Applied only to selected application in Group A: Irradiator, Radiotherapy; Nuclear Medicine In-Vivo & Therapy.</p>



RFRM licensing process

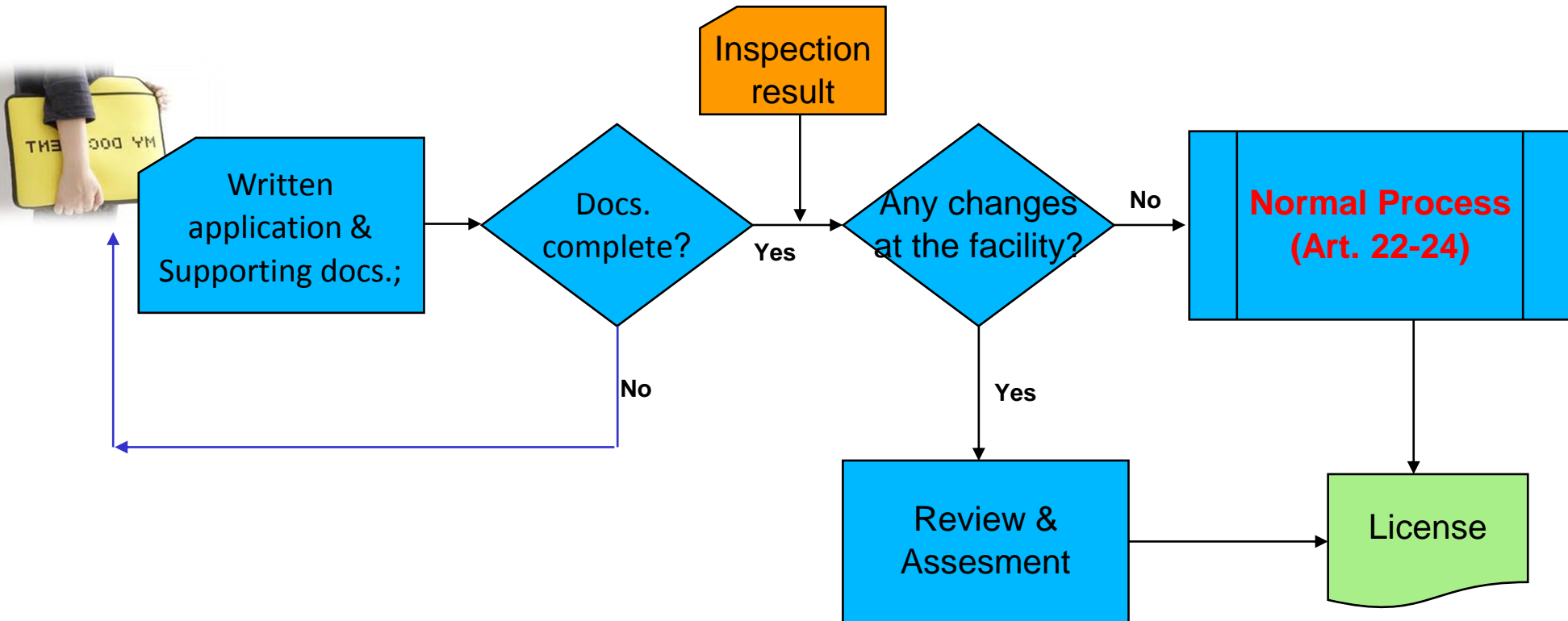




License renewal

One step: Art. 49-50 GR 29/2008

Multi Steps: Art. 51-52 GR 29/2008. Example: Radiotherapy





Nuclear Installations

Three research reactors operated by BATAN (National Nuclear Energy Agency)

- **MPR-30 (RSG-GAS) Reactor, Serpong (suburb of Jakarta)**

- 30 MWt maximum power; Uranium Silicide 19.75%
- Pool type with H₂O; Beryllium reflector.
- Construction: 1983. First criticality: 1987.
- **Production:** Mo-99 & Ir-192



- **TRIGA-2000 Reactor, Bandung, West Java**

- 2000 kWt maximum power; U-ZrH 19.75 %
- Pool type with H₂O; Graphite reflector.
- Construction: 1960. First criticality (250kW): 1964.



- **Kartini Reactor, Yogyakarta, Center of Java**

- 100 kWt maximum power; U-ZrH 19.75 %
- Pool type with H₂O; Graphite reflector.
- Construction: 1975. First criticality: 1979.



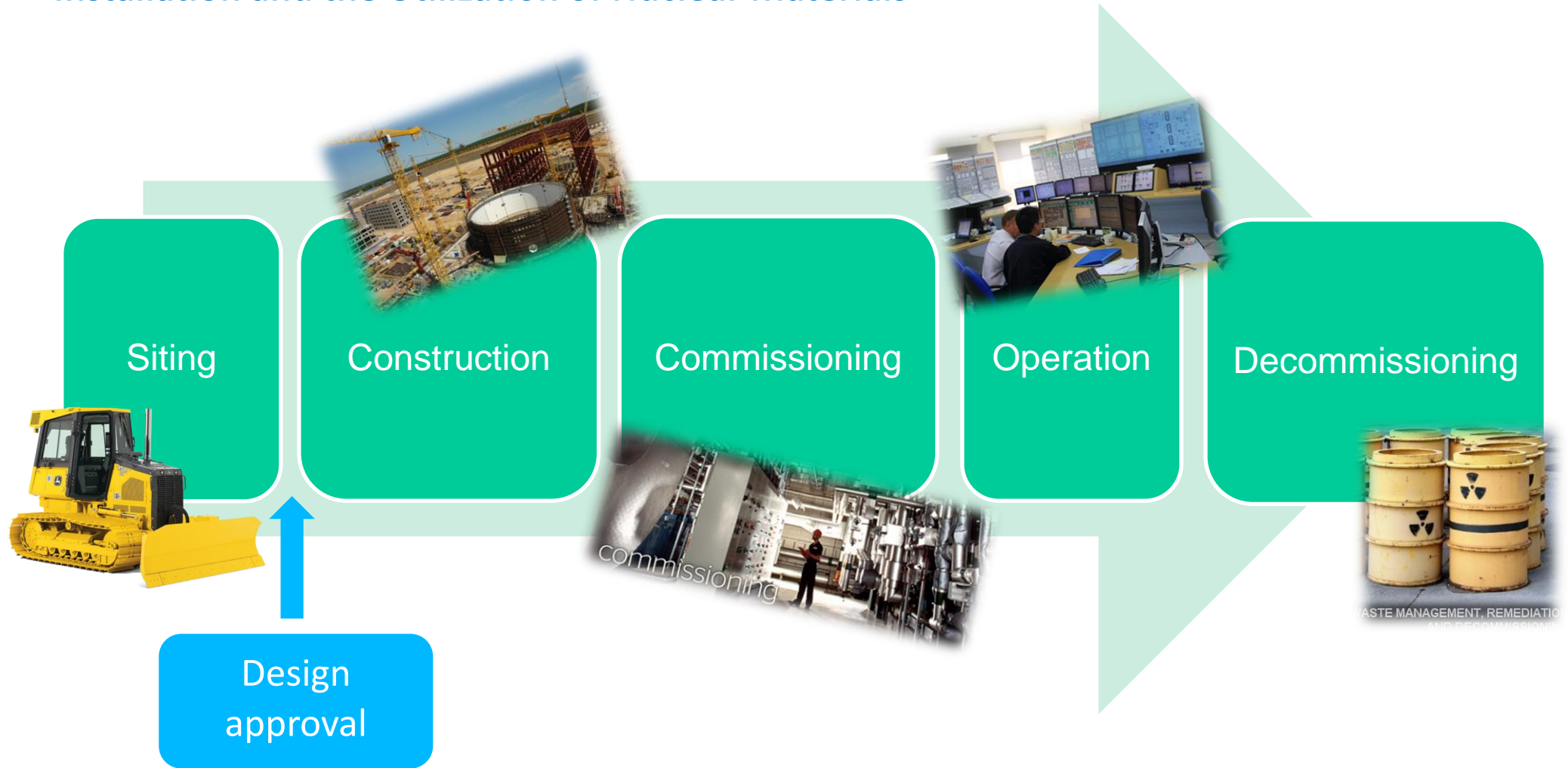
- **Planned facilities:**

- 30 MWth experimental power reactor. Serpong: Siting in progress.
- White book “5000 MWth NPP in 2025”. Bangka Island.
- Pilot plan for Near Disposal Waste Management Facility. Serpong



Multi-steps licensing

GR No. 2/2014 on the Licensing of Nuclear Installation and the Utilization of Nuclear Materials





Licensing documents for operation

GR No. 2/2014 on the Licensing of Nuclear Installation and the Utilization of Nuclear Materials

- Safety Analysis Report
- Management Systems
- Safeguards System
- **Design Basis Threat (Local)**
- **Physical Protection Systems**
- **Contingency Plan/Emergency Preparedness**
- Maintenance Program
- Ageing Management Program
- Decommissioning Program
- Environmental Monitoring & Management Report



Physical protection plan

GR No. 2/2014 on the Licensing of Nuclear Installation and the Utilization of Nuclear Materials

- Design Basis Threat (summary)
- Physical protection organization and personnel;
- Classification of NM
- Procedures
- Physical protection design and area classification
- Detection systems
- Physical Barrier system
- Access System
- Communication system
- Maintenance & surveillance
- Contingency plan
- Documentation



NM categorization

Bahan	Uraian	Golongan			
		I	II	III	IV
1. Plutonium	Tidak teriradiasi atau teriradiasi dengan paparan ≤ 1 gy/jam (100 rad/jam) pada jarak 1 m tidak terbungkus	≥ 2 kg	$500 \text{ g} < \text{Pu} < 2 \text{ kg}$	$15 \text{ g} < \text{Pu} \leq 500 \text{ g}$	$1 \text{ g} < \text{Pu} \leq 15 \text{ g}$
2. Uranium-235	Tidak teriradiasi atau teriradiasi dengan paparan ≤ 1 gy/jam (100 rad/jam) pada jarak 1 m tidak terbungkus – Uranium diperkaya $\geq 20\%$ U-235 – Uranium diperkaya antara $10\% - 20\%$ U-235 – Uranium diperkaya di atas uranium alam, tetapi kurang dari 10% U-235	≥ 5 kg – –	$1 \text{ kg} < \text{U-235} < 5 \text{ kg}$ $\geq 10 \text{ kg}$ –	$15 \text{ g} < \text{U-235} \leq 1 \text{ kg}$ $1 \text{ kg} < \text{U-235} < 10 \text{ kg}$ $\geq 10 \text{ kg}$	$1 \text{ g} < \text{U-235} \leq 15 \text{ g}$ $1 \text{ g} < \text{U-235} \leq 1 \text{ kg}$ $1 \text{ g} < \text{U-235} < 10 \text{ kg}$
3. Uranium-233	Tidak teriradiasi atau teriradiasi dengan paparan ≤ 1 gy/jam (100 rad/jam) pada jarak 1 m tidak terbungkus	≥ 2 kg	$500 \text{ g} < \text{U-233} < 2 \text{ kg}$	$15 \text{ g} < \text{U-233} \leq 500 \text{ g}$	$1 \text{ g} < \text{U-233} \leq 15 \text{ g}$
4. U-alam, U-depleksi, Th dan limbah bahan nuklir curah	Tidak teriradiasi atau teriradiasi dengan paparan ≤ 1 gy/jam (100 rad/jam) pada jarak 1 m tidak terbungkus	–	–	$\geq 500 \text{ kg}$	$1 \text{ kg} < \text{U/Th} < 500 \text{ kg}$



PPS for transport of NM

BCR No. 1/2009 on the Provision of Physical Protection of Nuclear Installation and Materials

- Advance notice to the receiver;
- Determination of transportation mode and routes;
- Provision on keys and seals;
- Transportation vehicle examination;
- Actions after consignment;
- Communication;
- Guards; and
- Emergency plan.



Part C

Inspection and Enforcement

- Countrywide inspection program
 - Types of RFRM inspection
- Inspection at nuclear installation
 - Enforcement



Countrywide inspection program



Industrial
3,447
Radioactive
Sources



Medical
63 Radioactive
Sources for
Radiotherapy



Research
14 Facilities
38 License





Types of RFRM inspection

1. Both for radiation safety and security of radioactive materials;
2. Regular announced Inspection:
 - Every 1 to 4 years (risk based inspection),
 - Around 60 inspection dispatches per year countrywide,
 - 1-2 weeks period / dispatch, or 10-15 facilities inspected / dispatch;
3. Unannounced inspection;
4. Inspection for special case;
5. Follow-up inspection (For Law-enforcement).

Sources Utilization		Frequency of inspection
Category 1	Industrial Radiography; Irradiators; Radiotherapy; Nuclear Medicine; ...	Once a year
Category 2	Well Logging; Import; CT Scan; Research; Gauging High Activity; ...	Every 2 years
Category 3	Gauging Low Activity; Diagnostic Radiology; Others ...	Every 4 years



Inspection at nuclear installation

1. Scopes:

- radiation safety,
- nuclear safety: Operation, maintenance, Quality Assurance Program, Emergency Preparedness & Response, ...
- **safeguards and physical protection**: Organization and personnel for physical protection system; Design Basis Threat; Physical Protection Plan; Contingency Plan; Procedures or guidelines related to physical protection implementation

2. Regular announced Inspection:

- 1 – 4 times per years (risk based inspection),
- 4 inspector / team; one team leader (senior inspector)
- 3 – 5 days period of inspection / dispatch.

3. Unannounced inspection;

4. Inspection for special case;

5. Follow-up inspection.



Enforcement

1. Directorate of Licensing has the right to grant, suspend, or revoke license;
2. For major finding in safety and/or security matters:
 - inspector may write instruction to the licensee to stop the operation in the site, after approval by the Director of Inspection;
 - Directorate of Licensing may send warning letter, can be repeated once again if the licensee does not perform corrective/preventive actions needed, before then suspense the license.
3. Penal provision (Act No. 10/1997 on Nuclear Energy):
 - Utilization or operation without license: Fines and/or imprisonment;
4. For finding in the form of penal provision violation, inspector may report to the Police provincial office, after decision made by the Chairman:
 - The Police performs investigation accordingly; Upon completeness of the investigation, General Attorney submits the Case to the Court of Law for prosecution;
 - Inspector can be a witness or an expert witness during investigation and prosecution;
5. **BAPETEN has:**
 - won 5 legal trials in the Court of law in the last three years (Radiation Facility);
 - suspend one reactor license for 2 years (2011-2013), and one production facility operated by state-own company since January 2014.



Part D

Out of Regulatory Control

- The National Legislation Implementation Kit on Nuclear Security (NLIK);
 - Nuclear Security Act (Draft)



NLIK

1. The National Legislation Implementation Kit on Nuclear Security was developed further to a commitment made by Indonesia to the second Nuclear Security Summit (NSS II), which took place during 26-27 March 2012 in Seoul, Republic of Korea.
2. Indonesia is presenting the Kit as its gift to the third Nuclear Security Summit (NSS III), in The Hague during 24-25 March 2014.
3. The Kit has two objectives:
 - to help States develop comprehensive national legislation on nuclear security, albeit following their own respective legal cultures and internal legal processes; and
 - to provide States with references to a wide array of consolidated elements and provisions contained in relevant international legal instruments and guidance documents that together establish the global framework for nuclear security.



NLIK Contents

III. MODEL LAW

1. Overview of the [Act, Statute, Ordinance, etc.]
2. Definition
3. Competent Authority
4. Authorization
5. Nuclear Security Measures and Coordination
6. Inspection, Verification and Monitoring, and Enforcement
7. Management
8. Confidentiality
9. Cooperation, Technical, and Mutual Legal Assistance (MLA)
10. Offences and Penalties
11. Jurisdiction
12. National Criminal Enforcement



NLIK Contents

IV. PROCESS FOR DEVELOPING NUCLEAR SECURITY LEGISLATION

1. Assessment of a national nuclear programme
2. Assessment of a national legal and regulatory framework
3. International obligations
4. Structure and level of detail of legislation
5. Participants in the process of developing legislation
6. Initial drafting
7. Legislative consideration; adoption and promulgation; oversight
8. Dispute resolution



NLIK References

- Combating Illicit Trafficking in Nuclear and other Radioactive Material (IAEA Nuclear Security Series No. 6)(2007);
- Nuclear Security Recommendations on Physical Protection of Nuclear Material and Nuclear Facilities (INFCIRC/225/Revision 5)(IAEA Nuclear Security Series No. 13)(2011);
- Computer Security at Nuclear Facilities (IAEA Nuclear Security Series No. 17)(2011);
- The International Legal Framework for Nuclear Security (IAEA International Law Series No. 4)(2011);
- IAEA Handbook on Nuclear Law (2003);
- IAEA Handbook on Nuclear Law - Implementing Legislation (2010);
- IAEA report by the Director General Nuclear Security - Measures to Protect Against Nuclear Terrorism (GOV/2006/46-GC(50)/13)(16 August 2006);
- UNODC Legislative Guide to the Universal and Anti-Terrorism Conventions and Protocols (2004);
- UNODC Guide for the Legislative Incorporation and Implementation of the Universal Anti-Terrorism Instruments (2006);
- Preparatory Commission for the CTBTO, Guide to CTBT National Implementation Measures (2013); and
- VERTIC report Illicit Trafficking of Nuclear and other Radioactive Material: The Legislative Response (2012).



Nuclear Security Act (Draft)

- Act No. 10/1997 on Nuclear Energy focuses mainly in safety (and liability) issues;
- Adopting the NLIK concept, the Draft will lay robust foundation for national infrastructure on nuclear security, including safeguards, physical protection, and out of regulatory control challenges;
- Providing legal bases to develop national policy and strategy on prevention, detection and response; mandate to related institutions, such as competent authorities, Customs, Police, Intelligent, to implement the strategies;
- The scope of prevention strategy:
 - Deterrence to nuclear security threat,
 - Information security provision,
 - Personnel trustworthiness,
 - Analysis and determination of threat level,
 - Safeguards system,
 - Security system for radioactive materials and physical protection, and
 - Coordination system for supervision.



Nuclear Security Act (Draft)

- The scope of detection strategy:
 - Provision and development of detection system,
 - Development of detection information system, and
 - Sustainability in detection measures.
- Depending on the location and typical problem, detection measures can be implemented by the Customs, Arm Forces, Police, Regulatory Body, and/or national agency for meteorology, climatology, and geophysics.
- The scope of response strategy:
 - Assessment to the information resulted from detection system,
 - Notification,
 - Collection and handling of evidence from nuclear security event,
 - Nuclear forensic investigation,
 - Provision of national security plan, and
 - Recovery measures.



Nuclear Security Act (Draft)

- Nuclear security management:
 - Human resources,
 - Facility and equipments.
 - Documentation,
 - Procedures,
 - Audit and assessment, and
 - Nuclear security culture;
- Information security;
- International cooperation;
- Funding;
- Public engagement;
- Penal provision;
- Investigation and Prosecution;
- Sustainability.



Remarks

- Indonesia is fully committed to implement safeguards, physical protection, and security of radioactive materials in accordance to international standards and best practice;
- NLIK is a practical guideline in developing nuclear security regulatory infrastructure, and is our national contribution to the international community on nuclear security;
- BAPETEN with MoFA promotes nuclear security Act, develops nuclear security infrastructure through national coordination meeting, awareness program, education and training, tabletop and field exercise, MEST activities for the existing RPMs, and international cooperation.

²³²⁻Thank
YoU⁻²³⁵