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The second workshop of the Research Reactor Decommissioning,
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Introduction

- *Nuclear Installation in Indonesia*

All Installations and Nuclear Materials in Indonesia that are managed by National Atomic Energy Agency (BATAN) and controlled by Nuclear Energy Regulatory Agency (BAPETEN) consist of Triga Research Reactor 2MWT in Bandung, Kartini Research Reactor 100 KWT in Jogjakarta and RSG Research Reactor –GAS 30 MWT in Serpong. And several other nuclear installations such as Installation for Production of fuel element Research Reactor, Installation for Experimental fuel Element Production, Radiometalurgi Installation, and Installation for Radioactive Management.

- *Roadmap for PLTN in Indonesia*

In the blueprint of National Energy Management (PEN) 2005-2025 it is said that 3% of national electricity energy demand will be supplied by NPP. The first NPP will be operated in Java Island in 2016.

- *Regulation in terms of decommissioning*

The age of the research reactors that are being managed by BATAN have been operated for more than 30 years, therefore BAPETEN is preparing a BAPETEN Chairman Regulation on Decommissioning. The first NPP will be operated in 2016, BAPETEN is preparing a Government Regulation on Licensing Procedure of NPP including the requirements on decommissioning funding for NPP owner party.

Operating data of RR in Indonesia

Reactor	Bandung	Kartini	GAS
Research	Triga	Reactor	Reactor
Power (kW)	2000	100	30 000
Type	Triga II	Triga II	MTR
Fuel	UO ₃	UO ₃	U ₃ Si ₂ -Al
First critical	Year 1964	Year 1979	Year 1987
Application	Research, Training & Isotop production	Research, Training	Research, Training & Isotop production
Operating Organization	Batan	Batan	Batan

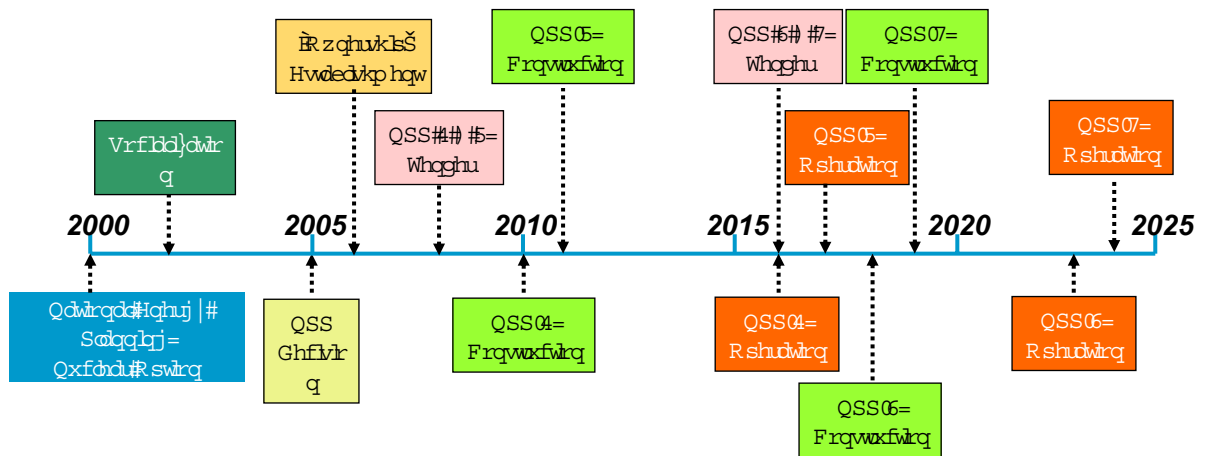
Nuclear Instalation Pt. Gresik (private company)

Production	Yellow cake
1979	Operating license
2000	Submit to decommissioning License
2003	Decommissioning license
2007	Start to decommissioning

Photograph

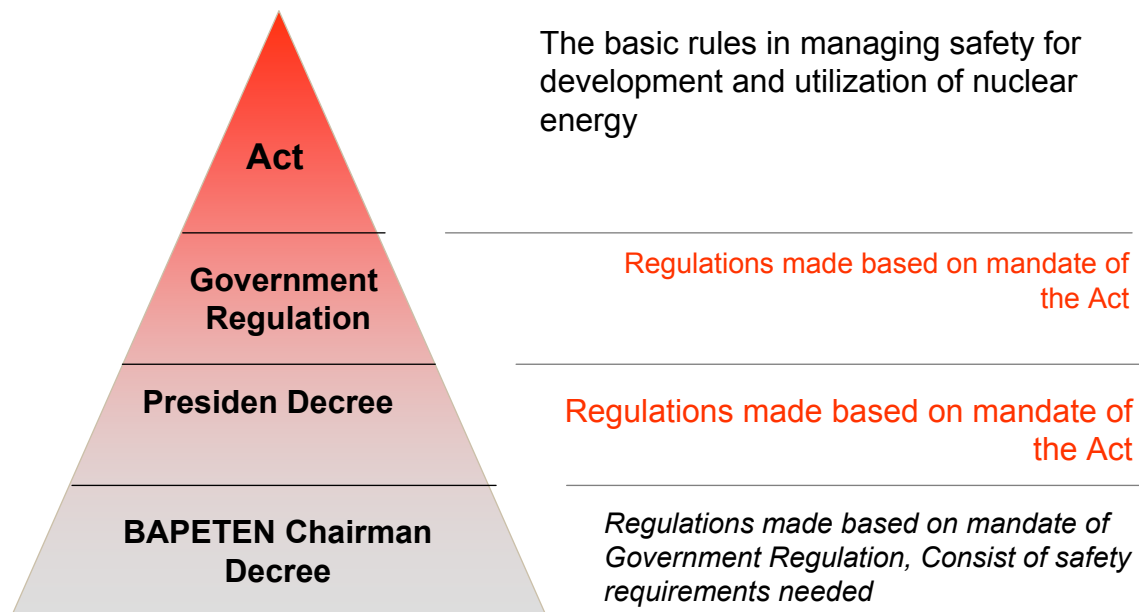
NUCLEAR ENERGY ROADMAP 2000-2025^{*)}

(Ministry of Energy & Nat.Resource - Energy Coordination Board)



^{*)} Presented elsewhere by Ministry of Energy & Nat.Resource – Energy Coordination Board.
 May 11, 2005 presented & discussed with BATAN & BAPETEN at BAPETEN's office.

National Legislation Hierarchy



Act Number 10/1997 on Nuclear Energy

- Enacted on April 10, 1997
- Consists of 10 chapters and 48 Articles
- Article 4, gives instruction to the Government to make a Regulatory Body.

BAPETEN is made based on Government Regulation Number 103 / year 2001

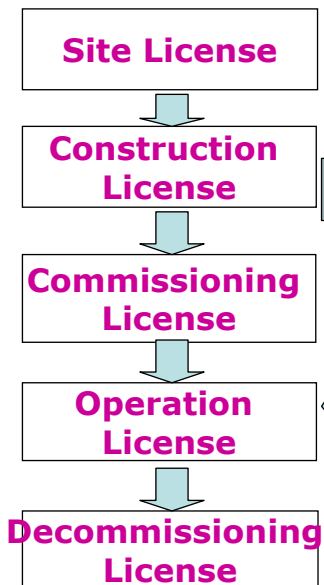
- Article 13, decommissioning for noncommercial nuclear installation utilization is performed by BATAN, decommissioning for commercial nuclear installation utilization is performed by private party
- Article 17, gives instruction to Government to make requirements and procedures of licensing

Regulation in terms of Decommissioning

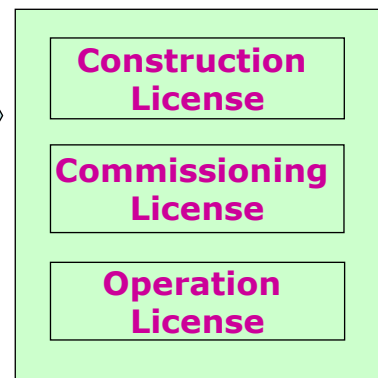
- Draft on Government Regulation on *Licensing of Nuclear Reactor*
 - Chapter VII, decommissioning license
- Government Regulation Number 27/2002 on *radioactivity waste management*
 - Chapter IX To perform Decommissioning operating organization shall submit to BAPETEN: program and schedule of decommissioning performance
- Draft Bapeten Decree, Decommissioning

Steps of licensing

License in Stages



Combined License



DECOMMISSIONING LICENSE

- The operating organization is obliged to submit a decommissioning license application, when the operation license has expired and will not be extended or accident or stop operation by BAPETEN
- To obtain the license, an applicant shall
 1. Fill a license form
 2. Submit documents consist of:

- a. A decommissioning program, including a decommissioning schedule
- b. A site evaluation outline in the decommissioning stage
- c. Dissection on nuclear material, hazardous material, soil, construction, system and component that will be affected by decommissioning
- d. Decommissioning management system
- e. Safety Environment Report during decommissioning

- f. Program on decommissioning emergency response
- g. Qualification and training requirements and training program for decommissioning employee
- h. Dissection on the proposed site when the decommissioning has been completed

To extend the decommissioning license,
the applicant shall:

1. Fill the license form
2. Submit the latest decommissioning program and schedule

[Flow diagram](#)

In summary

- Research reactor in Indonesia will be in a decommissioning stage within the next 10 years
- BAPETEN Chairman Decree, on provisions and guidelines in the decommissioning need to be prepared in terms of a decommissioning activity to face the ageing of research reactor and of fulfilling the requirements in the construction of PLTN
- Preparation and development of Human Resources in the controlling of decommissioning