PRELIMINARY STUDIES FOR THE DECOMMISSIONING OF THE REACTOR COMPARTMENTS OF THE FORMER PALDISKI MILITARY NUCLEAR SITE AND FOR THE ESTABLISHMENT OF A RADIOACTIVE WASTE REPOSITORY

Development of Lithuanian Radioactive Waste Management Strategy

Stasys Motiejūnas

Country Profile

- From 1984 till 2009 Lithuania operated one Nuclear Power Plant – Ignalina NPP
  - The NPP was the main source of electricity in Lithuania
  - it has generated 80-85% of the total electricity production
- No uranium mining and nuclear fuel fabrication industry
  - The nuclear fuel was supplied by Russia
  - There are no plans for fuel reprocessing
- No research reactor

WASTE SOURCES IN LITHUANIA

- **Ignalina Nuclear Power Plant consisting of two RBMK-1500 type reactors, commissioned in December 1983 and August 1987**
- **Unit 1 was closed down for decommissioning in 2004 while the unit 2 was stopped in 2009**
- **Former operator of the NPP is responsible for decommissioning/ dismantling activities**
- **Maišiagala repository for institutional waste was operated from 1963 till 1989, in 2006 reconsidered as a storage facility**

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Waste sources in Lithuania

- More than 99% of waste is generated by Ignalina NPP
  - operation
  - dismantling
- Institutional waste, orphan sources

Nuclear Waste Directive

- In July 2011 EU Council adopted Directive 2011/70/Euratom:
- The storage of radioactive waste, including long-term storage, is an interim solution, but not an alternative to disposal
- Member States are obliged to include the disposal options in their national policies
- "It is broadly accepted at the technical level that, at this time, deep geological disposal represents the safest and most sustainable option as the end point of the management of high-level waste and spent fuel considered as waste"

New Waste Management Strategy elaborated in response to the Nuclear Waste Directive

Objectives:

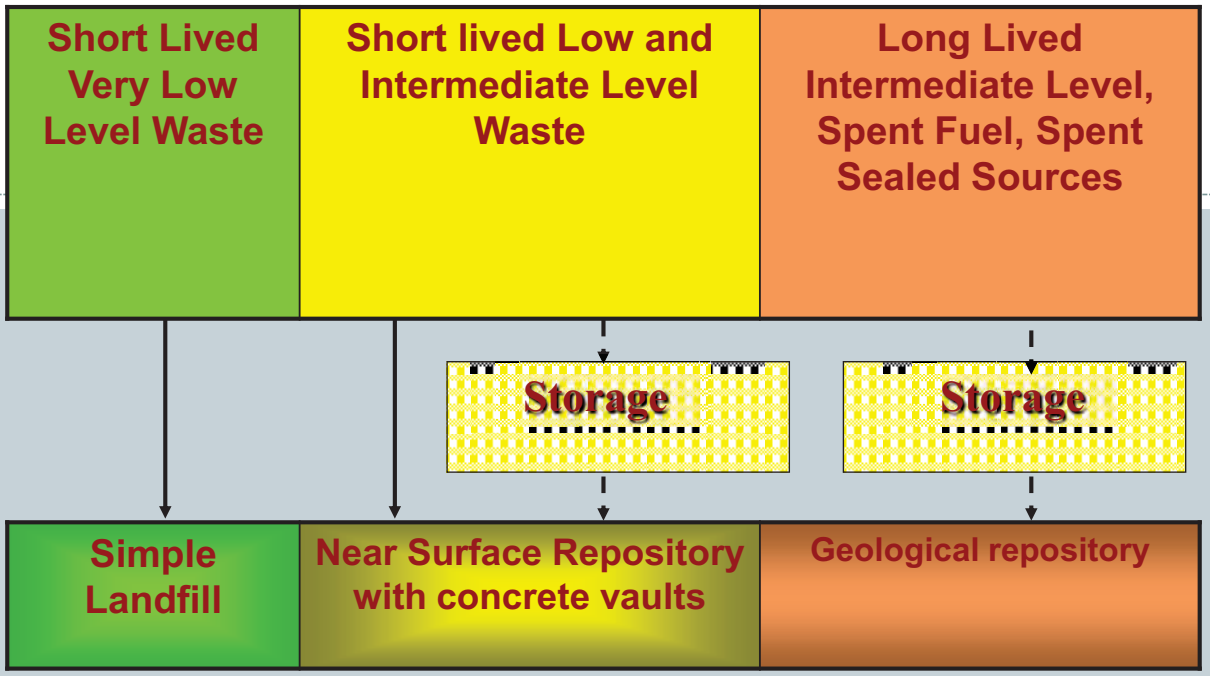
- Waste minimization
  - waste clearance principle widely applied for the NPP dismantling waste
- High level nuclear, radiation protection and environmental safety of Spent Nuclear Fuel and Radioactive Waste
- Long- term safety of Spent Nuclear Fuel and Long- Lived Radioactive Waste
  - long- term plan for geological repository construction
- Public information

Classification of waste in Lithuania and waste disposal ways

Class	Final processing	Disposal way
Short-lived waste		
A – Very low level	Unnecessary	Simple landfill
B – Low level	Required	Near surface
C – Intermediate level	Required	Near surface
Long-lived waste		
D – Low level	Required	Near surface or intermediate depth
E – Intermediate level	Required	Geological
F – Spent sealed sources	Required	Geological
Spent fuel	Required	Geological

Nuclear Waste Management in Lithuania

Three waste streams



Three disposal facilities

Landfill for Very Low Level Waste in Sweden

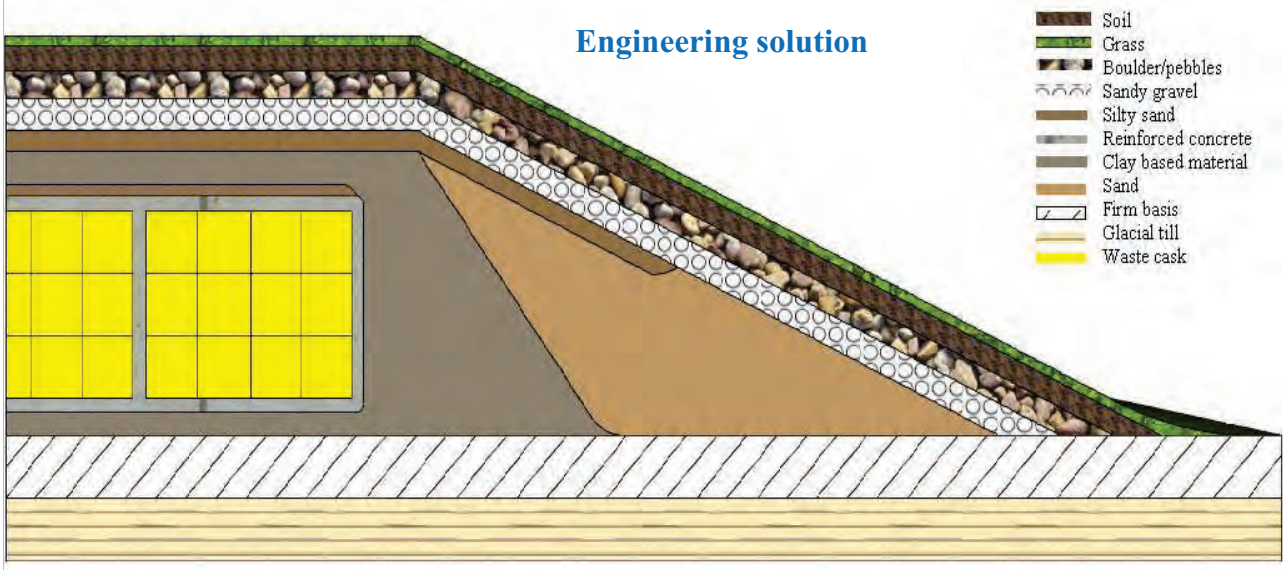
Ignalina NPP plans to build similar facility

Amount of wastes: 60 000 m^3

Waterproof layers

Concept of the Near-surface Repository for Low- Level Short-lived Waste

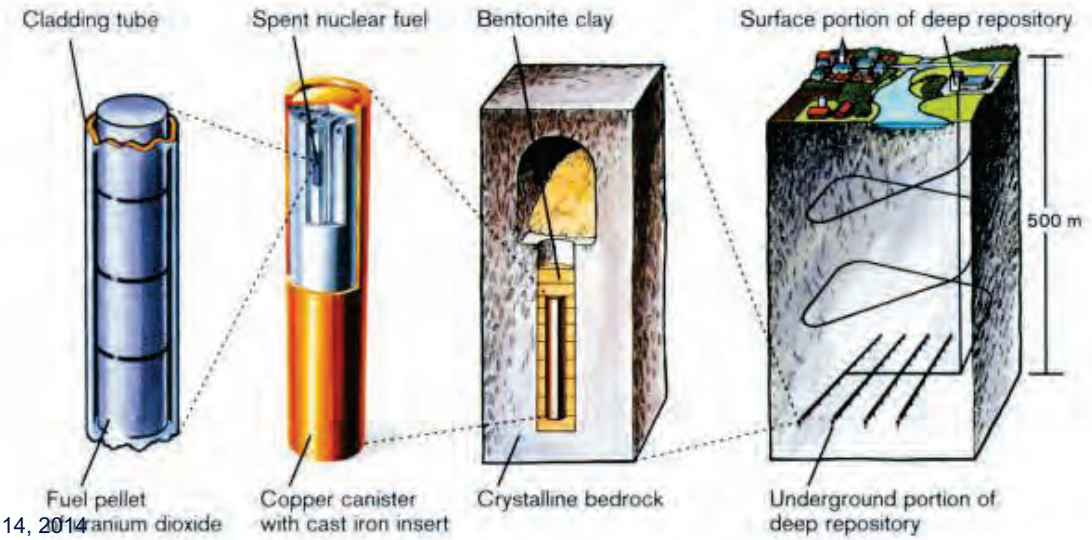
Engineering solution



Concrete vault-based hill-type Repository
50 disposal cells for Waste conditioned in concrete containers
Corrosion-resistant multi-layer engineering protective barriers
Facility total area, including repository, protection zones and auxiliary structures – ca. 40 ha
Operational period – till 2030. Post-closure control for at least 300 years

Geological repository for Spent Fuel and Long- Lived Wastes

- A concept of repository to be built in Sweden
  - at a depth of 500 m



Conclusion

- Lithuanian radioactive waste management experience could be important when Estonia will start planning construction of the NPP

SIMILAR EXPERIENCE

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Thank you very much!