

# Ignalina NPP Decommissioning



**Valentin Šeider**

## Overview of INPP Decommissioning

26 April 2011



Ignalina NPP decommissioning activities are co-financed by European Union

# Agenda

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## Ignalina NPP

- § Ignalina NPP overview

## INPP decommissioning strategy

- § What are we going to do?
- § How are we going to do it?
- § When are we going to do it?

## Decommissioning Projects

- § Decommissioning Projects Pipeline

## D&D Projects Progress

- § D&D activities sequence
- § D&D Project Status



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# Ignalina NPP



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# Welcome to INPP

## A brief history

- Ignalina Nuclear Power Plant has been an important part of Lithuania's energy heritage since 1983 (Unit 1 - 1983, Unit 2 - 1987)
- As a result of the political dialogue leading up to EU enlargement, Lithuania agreed to the early closure of its reactors
- INPP-DS was established in 2001 to start preparatory works for Ignalina NPP decommissioning activities
- Following the Law on the Decommissioning of INPP Unit 1, the Programme on Unit 1 decommissioning was first adopted in 2001 and the updated Programme on INPP Unit 1 and Unit 2 was approved on February 2005.
- Reactor of Unit 1 was shut down 31 December 2004, Unit 2 Reactor was shut down 31 December 2009



# Welcome to INPP

## A brief history

- During the period 2001-2004 Ignalina NPP developed and the Ministry of Economy approved the Final Decommissioning Plan (FDP) on 4 July, 2005.
- The FDP pointed out the Immediate Dismantling strategy in order to landscape the INPP surrounding applying the recultivation, preserve the operated buildings and the infrastructure (to reach the “brown field” stage) up to the year 2029.



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# INPP decommissioning strategy

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# Decommissioning strategy – What?

## Reduce nuclear risk:

- § final shutdown of the Units
- § defuel reactors and pools and provide safe interim storage for spent fuel

## Reduce environmental risks:

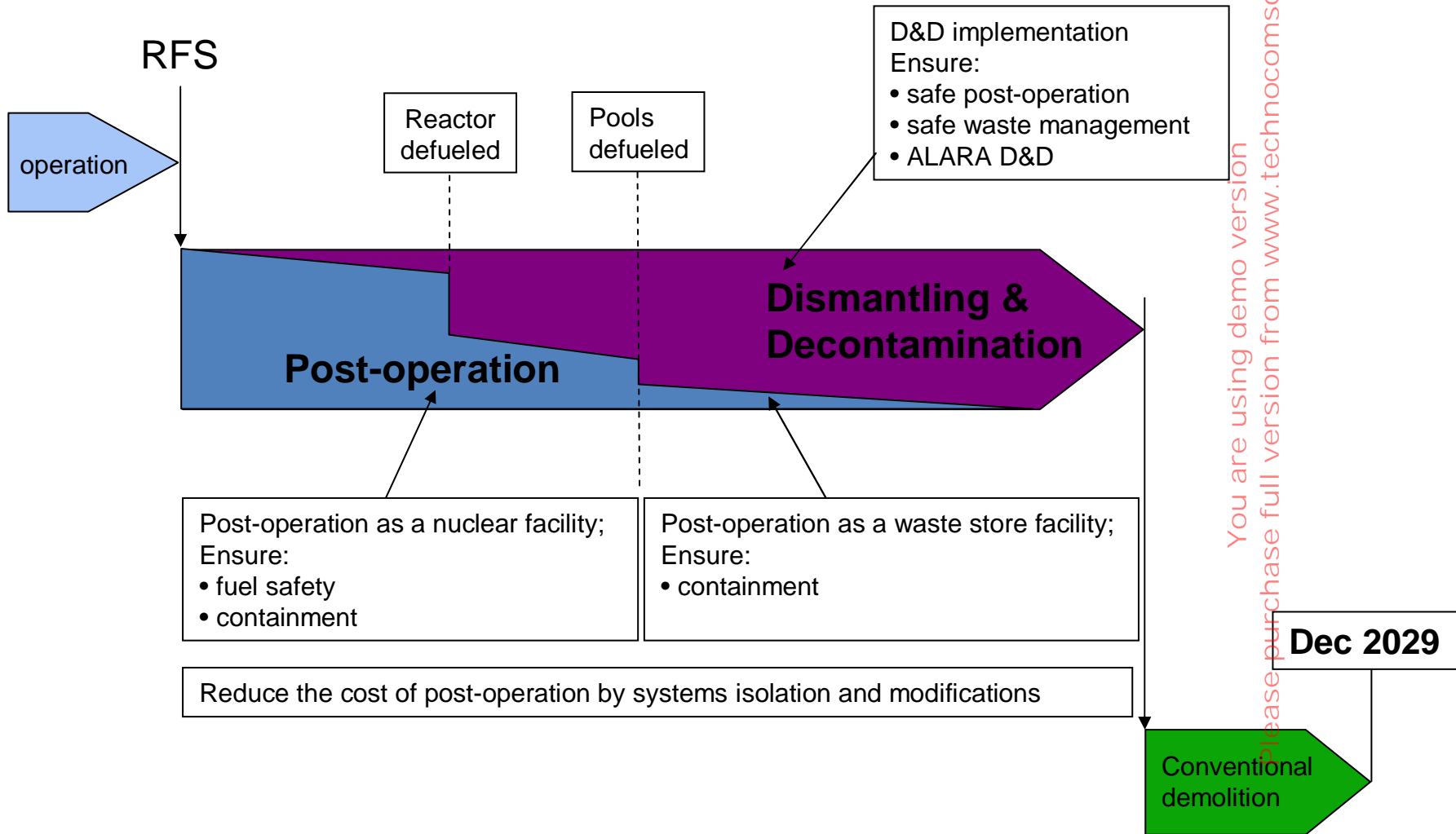
- § upgrade of existing waste storages
- § retrieval, conditioning and safe storage/disposal of stored operational waste

## Proceed with D&D according Immediate Dismantling strategy:

- § dismantling must be justified considering fuel safety
- § D&D can only take place if waste management routes and interim storage/disposal facilities are available



# Decommissioning strategy – How?



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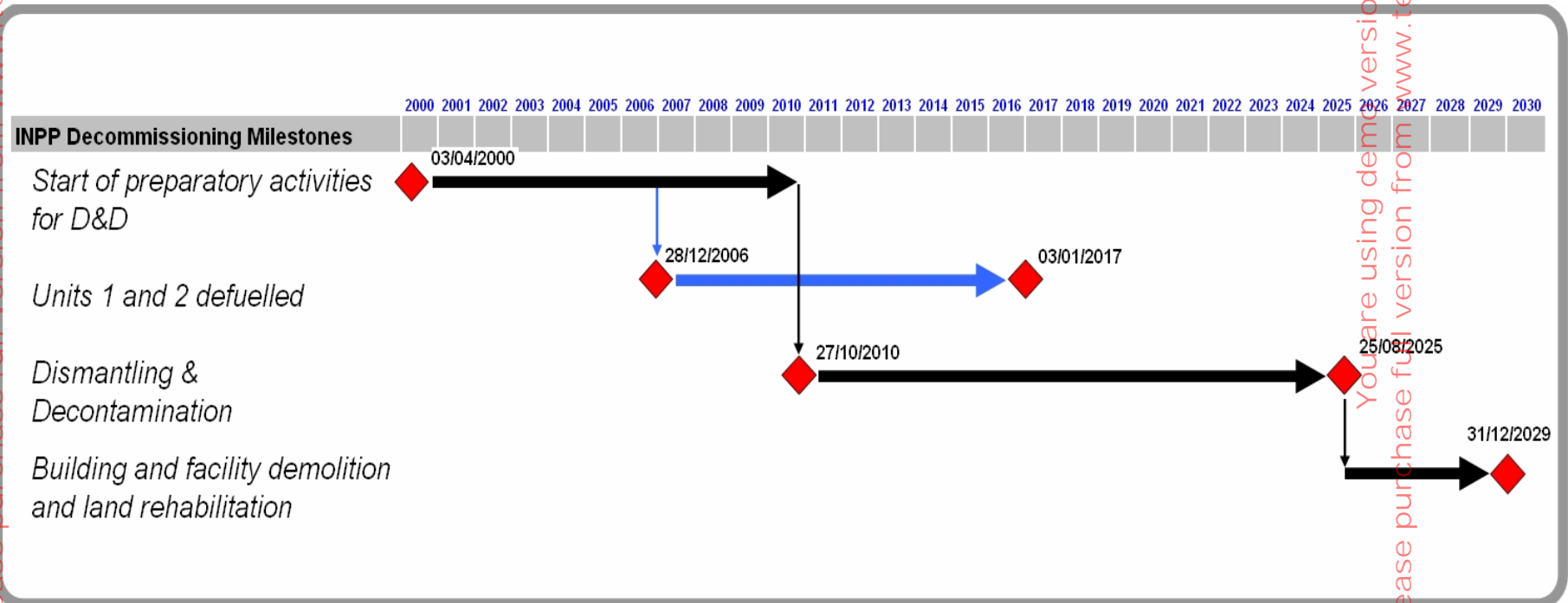
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# Decommissioning strategy – When?



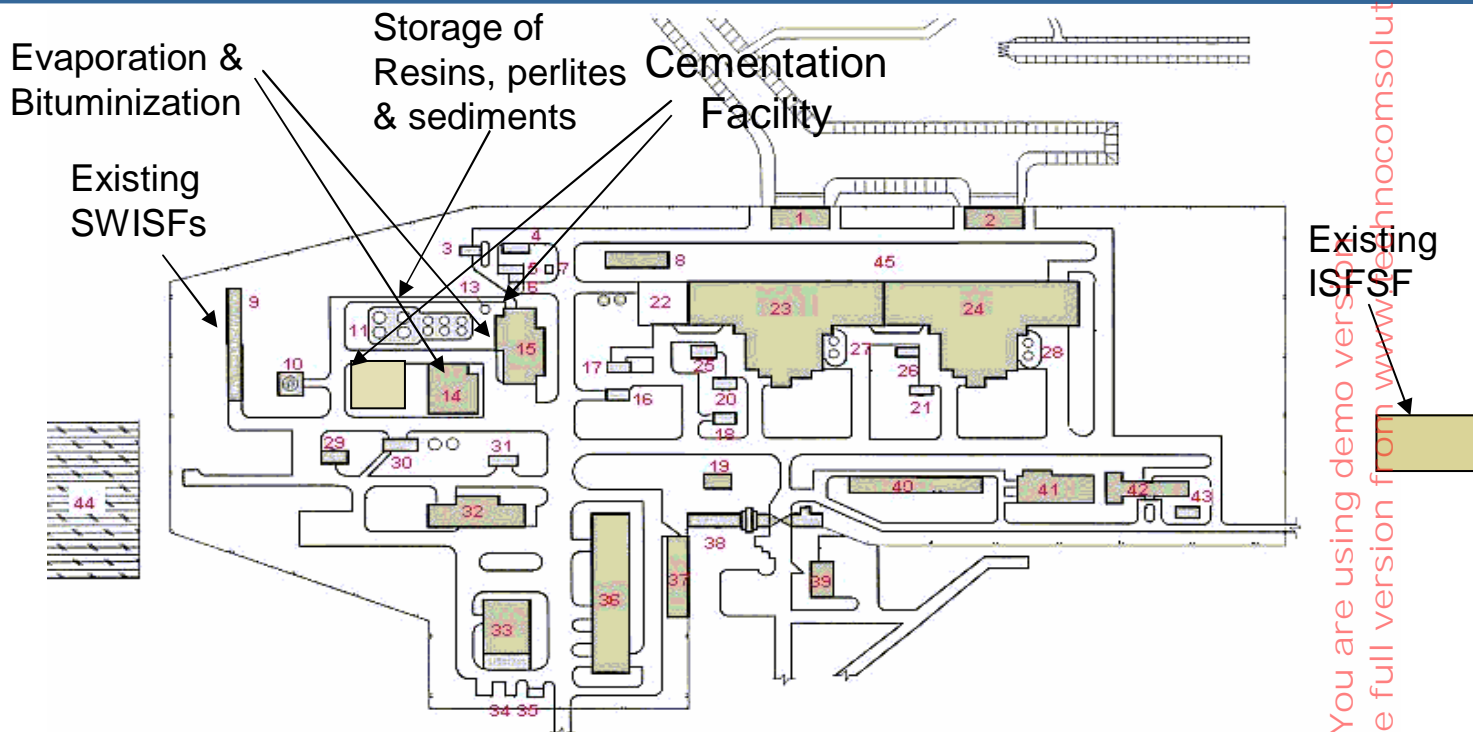
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# INPP waste management strategy

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# Operational and D&D Waste Inventory



## INPP Site – Stored waste end 2009

Stored Fuel	22 000 assemblies
Stored SW	30 000 m <sup>3</sup>
Bituminized waste	14 000 m <sup>3</sup>
Waste to be cemented	6 000 m <sup>3</sup>

## INPP Site – Decommissioning

Equipment	130 000 tons of steel
Reactor	4 000 tons of steel
	4 000 tons graphite
	11 000 tons filling
Buildings	1 000 000 m <sup>3</sup> of concrete
	200 000 tons of steel



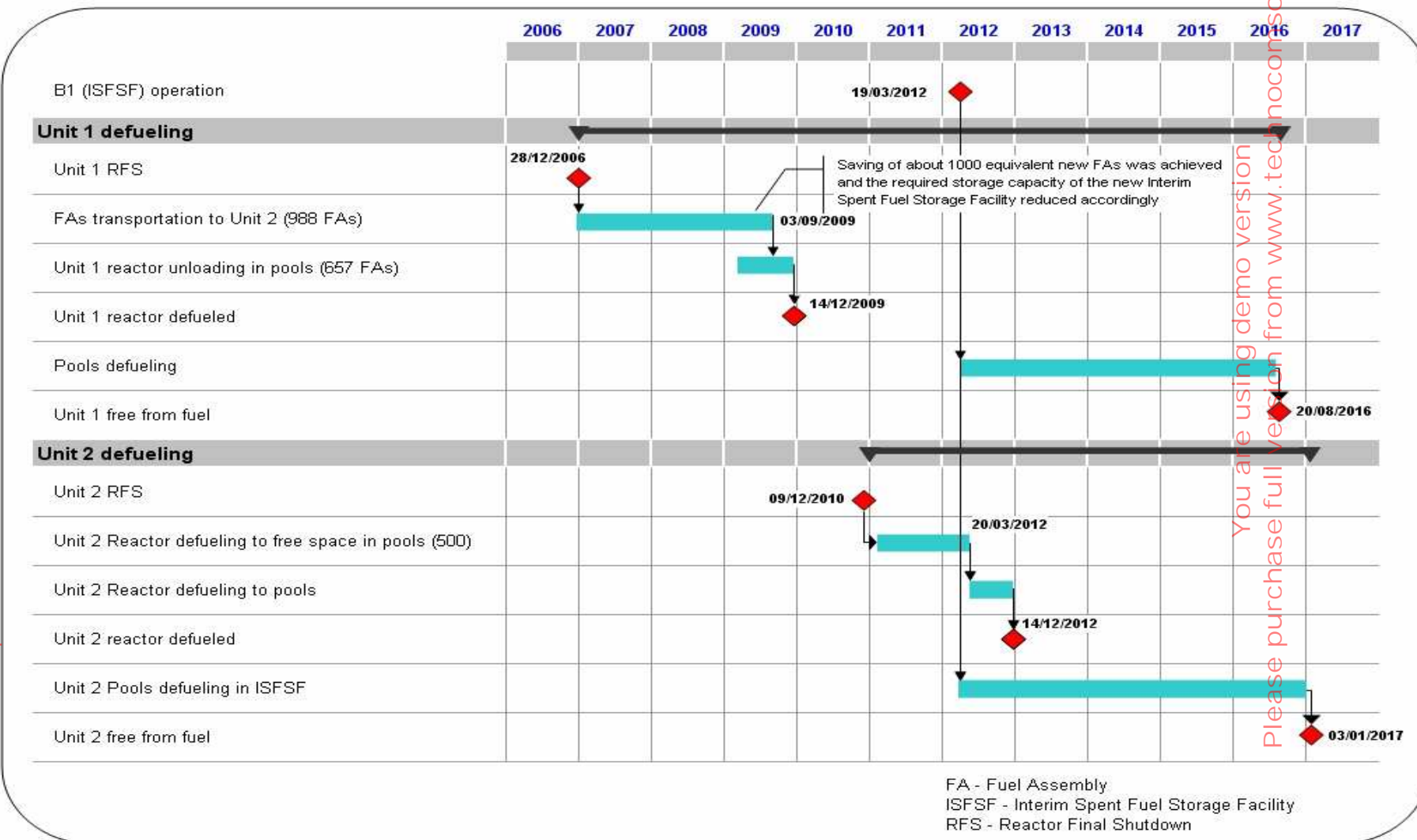
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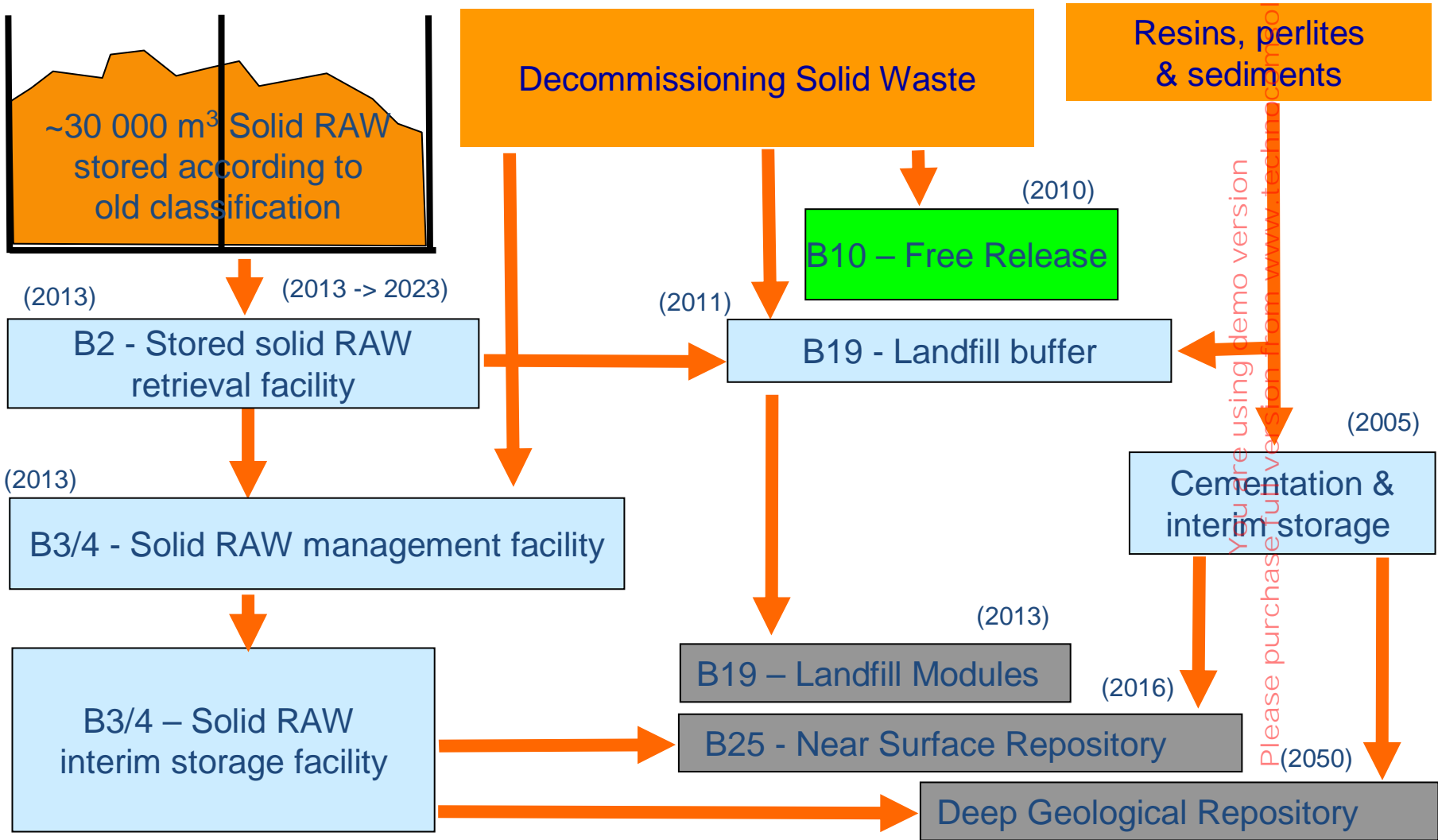
# Spent nuclear fuel

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# Operational & Dismantling Solid Waste



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# Decommissioning Projects

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# The Decommissioning Projects pipeline

## Projects for Units shutdown preparation:

- § PDP (early 2000): Immediate Dismantling, Deferred Dismantling
- § FDP/DEIAR (early 2004): Immediate Dismantling; FR, Landfill and NSR
- § U1DP0/DSAR/DEIAR (2005): Decommissioning Project for Unit 1 RFS and defueling
- § New Heat & Steam Boilers (2005)
- § U2DP0 (2010): Decommissioning Project for Unit 2 RFS and defueling



## *The Decommissioning Projects pipeline*

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### **Projects for operational waste retrieval, management and storage:**

- § Cementation facility (2005)
- § B2/3/4 – New Solid Waste Management & Storage Facility

### **Projects for Units decommissioning preparation:**

- § B6 – New Archive Building and System (2005)
- § B11 – Tools for radiological inventories (2006)
- § B17 – Decommissioning Management & Data Base (2008)
- § B21 – Training Center upgrade (on-going)

# The Decommissioning Projects pipeline

## Projects for opening needed waste routes:

- § B10 – Free Release Measurement Facilities (2010)
- § B18 – Melting unit (pending)
- § B19 – Landfill – Buffer storage (2011)
- § B20 – Upgrade of bituminized waste storage (start 2013)
- § B25 – Near Surface Repository (2016)

## Projects for Units defueling:

- § Extension of the existing ISFSF (2007-2010)
- § B1–New Interim Spent Fuel Storage Facility (2011->)
- § B8–Nuclear fuel transport to U2 for re-use (2006-2009)



# *The Decommissioning Projects pipeline*

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## **Projects for dismantling low contaminated components:**

§B9-0/B9-1/B9-5 – the DPs for D&D in 117/1, G1 and 119

§B13/B14/B15 – Tools for dismantling and decontamination

## **Projects for dismantling medium to high contaminated components:**

§B9-2/B9-3/B9-6 – the DPs for D&D in V1, A1, B1

§B22/B23/B29 – Tools for dismantling and decontamination

§B12/B24 – Facilities for MCC in-situ decontamination



# The Decommissioning Projects pipeline

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## Projects for dismantling of activated components:

- § UP01 (former B9-4 and B30) – Reactors dismantling and Reactors remote dismantling tools

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# New Facilities Projects completed



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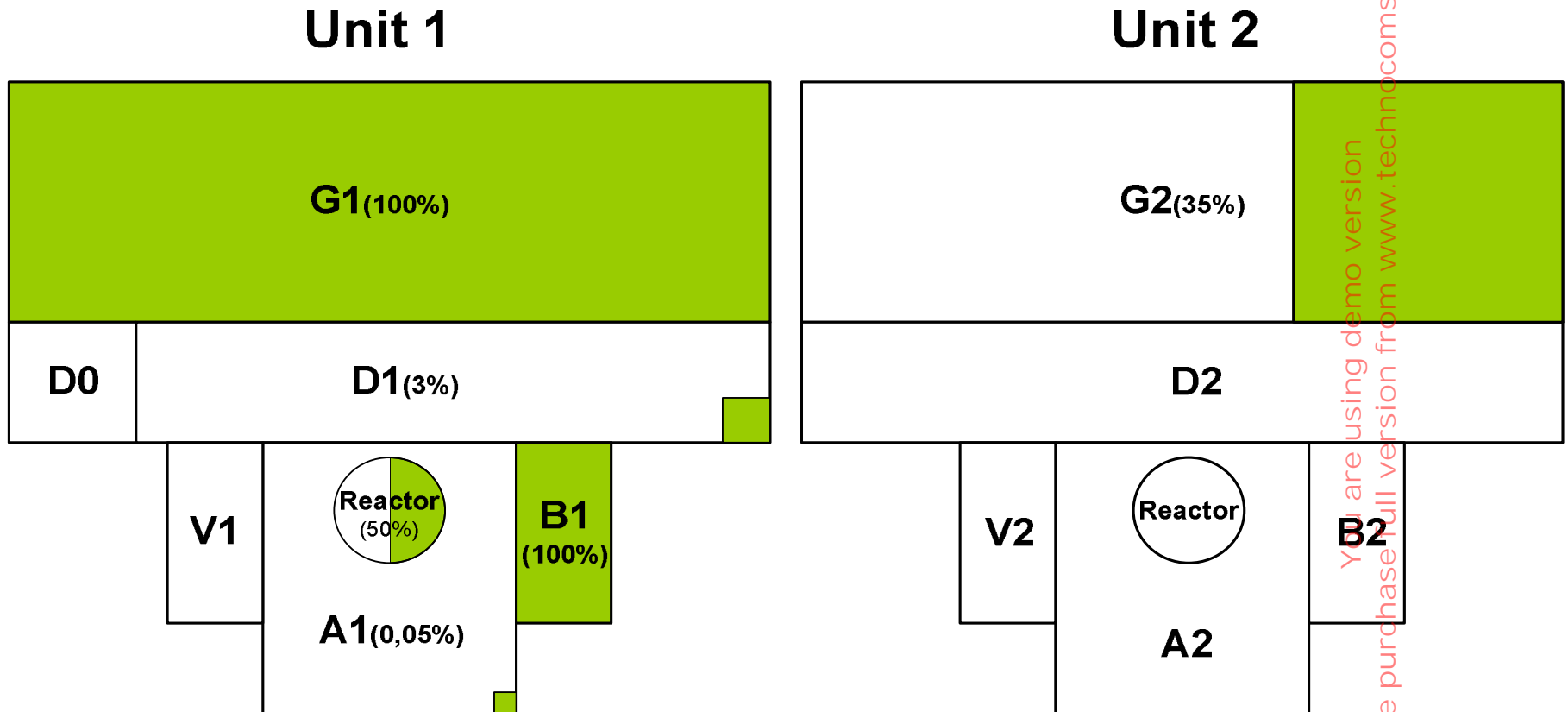
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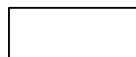
# D&D Projects Progress

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# Engineering Inventory



-  - Complied
-  - In progress

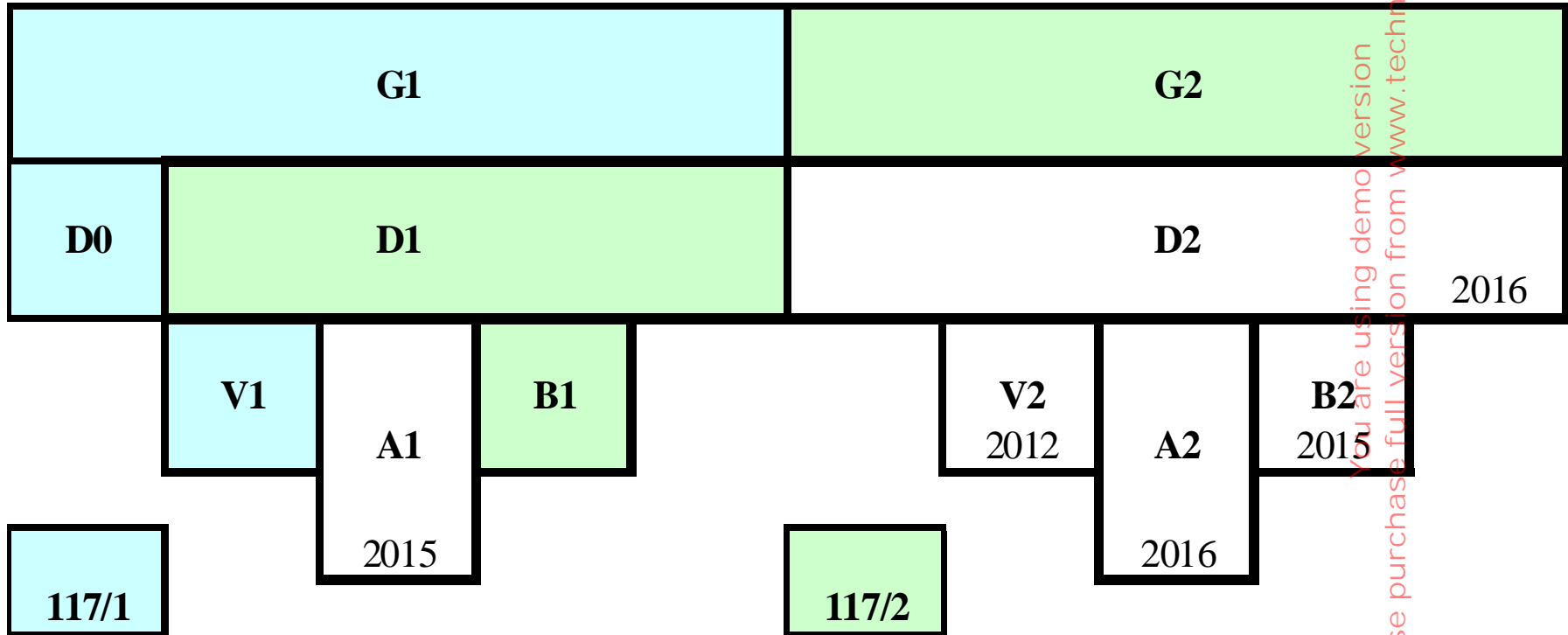
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# Radiological Characterisation



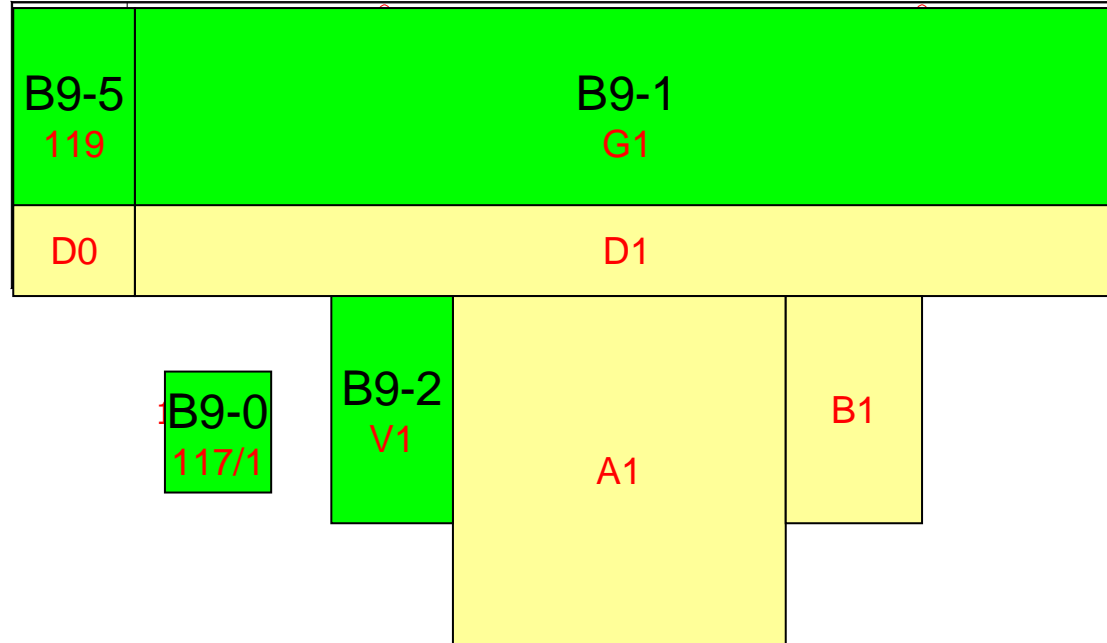
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# Unit 1 Ongoing D&D Projects



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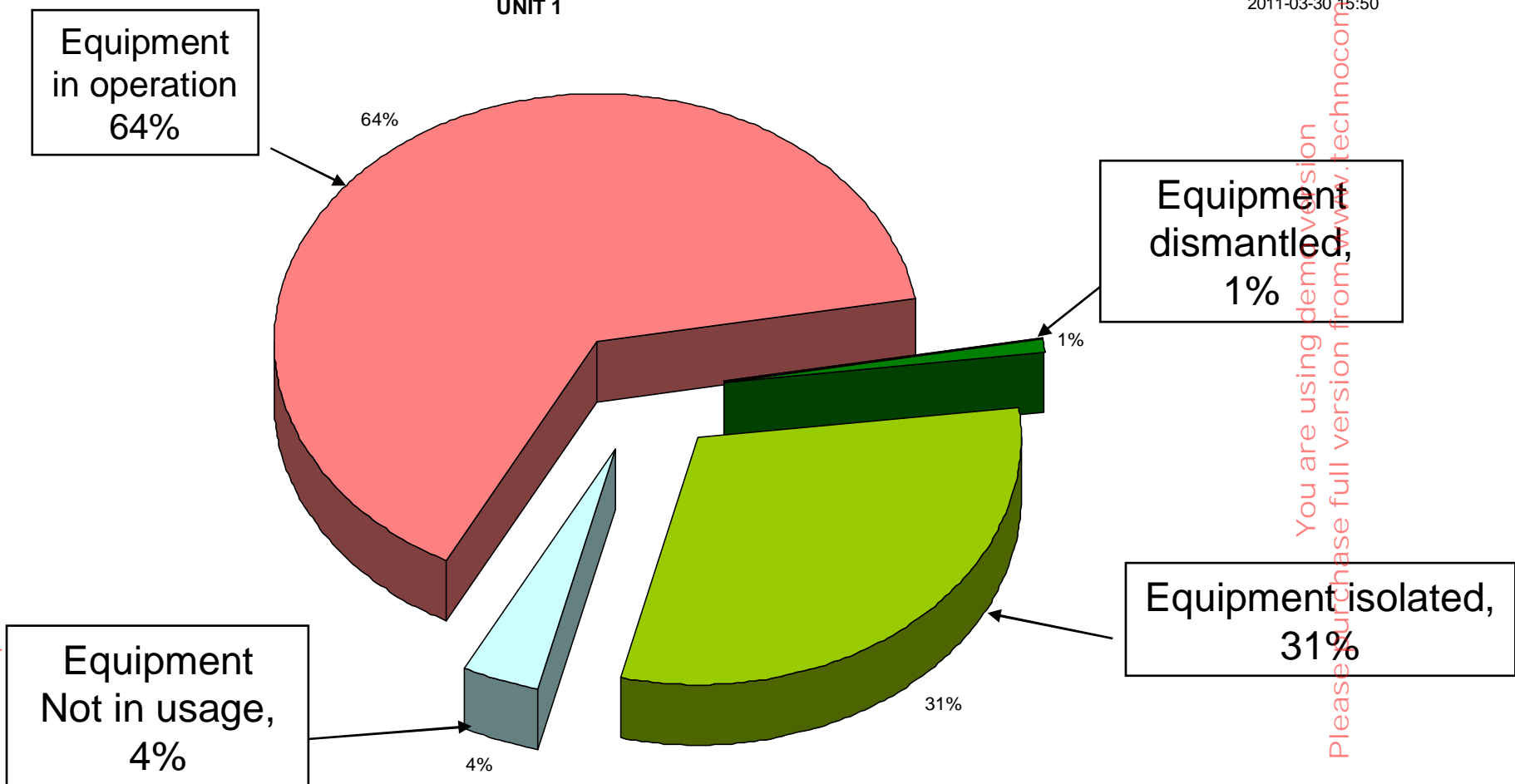
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# Equipment status – Unit 1

2011-03-30 15:50



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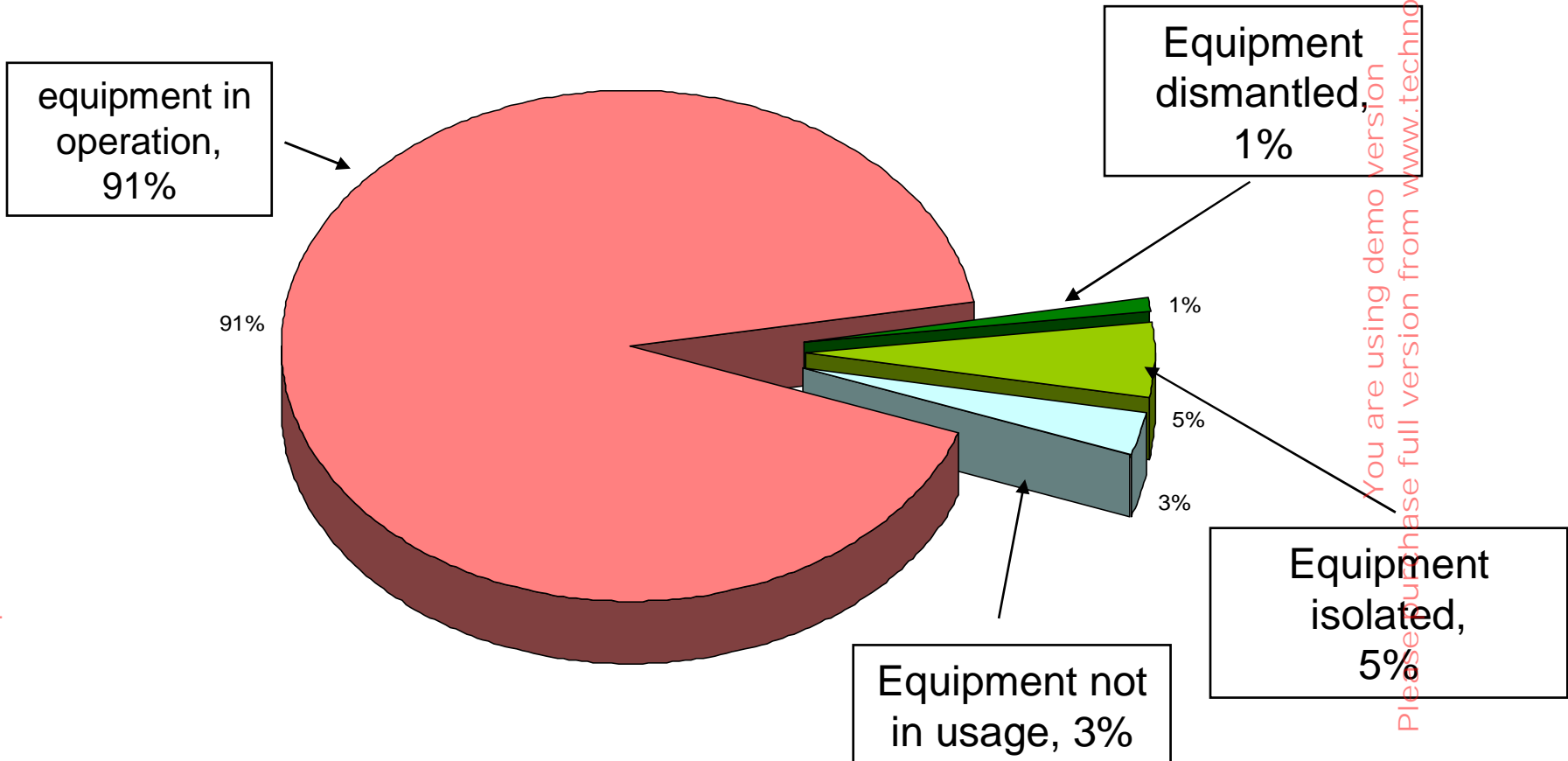
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# Equipment status – Unit 2

UNIT 2

2011-03-30 10:26



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# Progress of the D&D Preparation

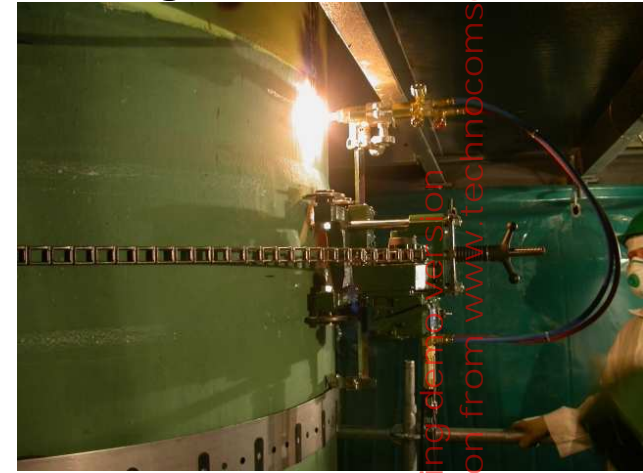
## Preparatory Works implementation within Bld 117/1 (B9-0)

### Room 02 ( before and after)



# Progress of the D&D Preparation

## D&D tools installation/commissioning within Bld 117/1



# Progress of the D&D Implementation

## D&D Works implementation within Bld 117/1 Room 08 (before and after dismantling of ECCS headers)



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# Progress of the D&D Preparation

## Preparatory Works within Unit 1 Turbine Hall (B9-1)



# Progress of the D&D Preparation

## Preparatory Works within Unit 1 Turbine Hall (B9-1)



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# Progress of the D&D Preparation

## Preparatory Works within Boiler House (B9-5)



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# Progress of the D&D Preparation

## Preparatory Works within Boiler House (B9-5)



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