

# **TOSHIBA**

Leading Innovation >>>



# **Activities of Toshiba for Decommissioning Nuclear Facilities in Japan**

**WM2017 Session 14; International Featured Country: Japan -  
Perspectives on Decommissioning NPPs in Japan**

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# 1. D&D Activities by Toshiba Group

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## Japanese Reactors Dismantling

- Japan Power Demonstration Reactor (JPDR) : RPV Segmentation
- Toshiba Training Reactor (TTR) : Planning - Dismantling
- The Musashi Reactor (Tokyo City University's Reactor) : Planning - Dismantling
- Rikkyo University Reactor (RUR) : Planning - Dismantling

## Japanese Reactors D&D related studies

### Atomic Energy Society of Japan (AESJ) Standards

- Committees of Decommissioning, Waste management, Fuel casks, Inventory estimation method, ..... and more

### Feasibility study, Work package planning

- System Decon. before dismantling
- Suppression chamber waste water treatment system
- Site waste treatment/storage facility
- ..... and more

## Japanese Reactors reactor internals replacement work

- Core Shroud replacement: 4 units completed
- PLR piping replacement, ICM housing replacement
- ..... and more

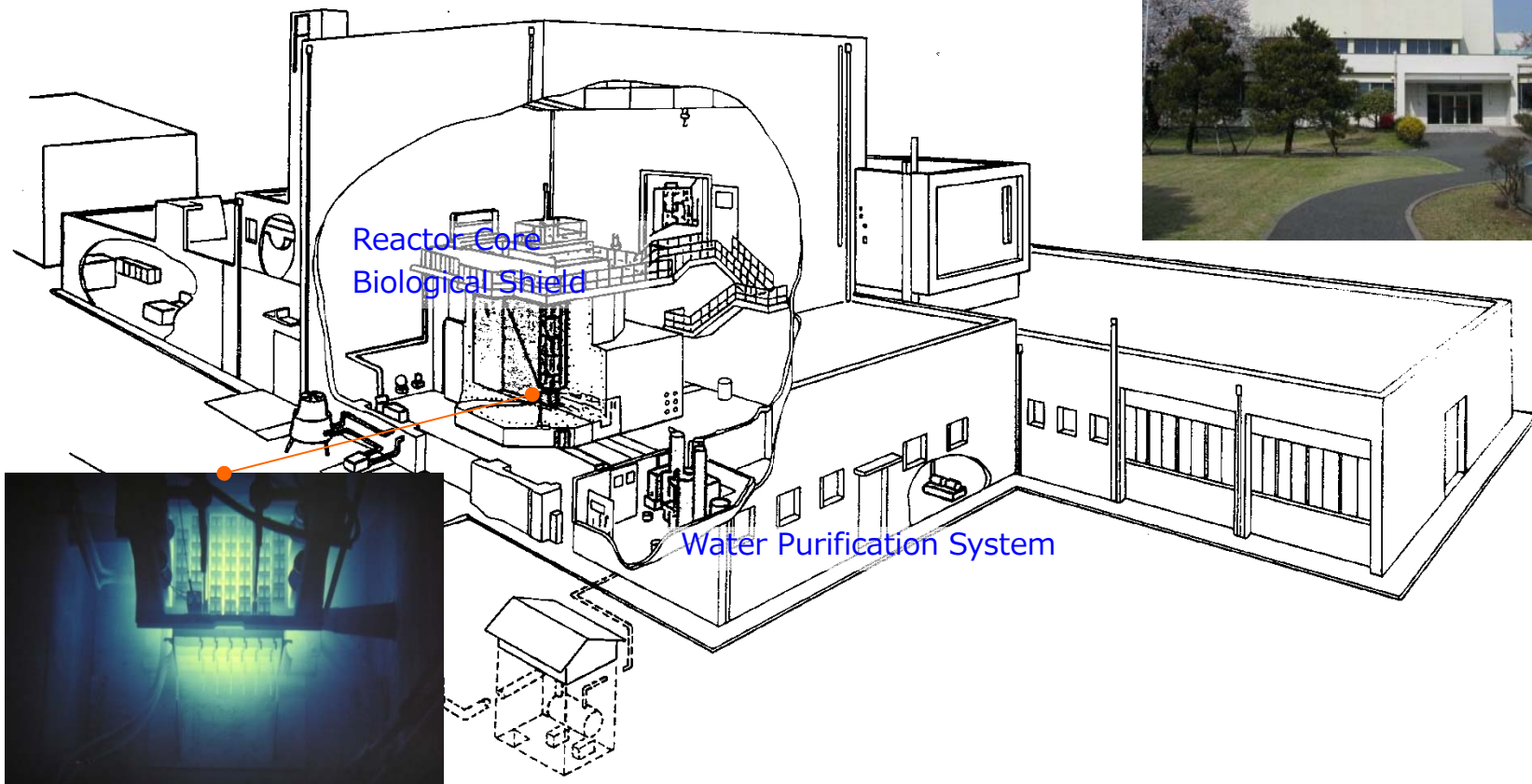
## Activities by Westinghouse

- Vandellos :Decon., Planning, Licensing Support)
- Zorita(PWR) :Planning, System Decontamination, CI and RPV dismantling
- BWRs in Sweden :RI replacement, D&D planning study
- ..... and more

## 2. Experience of Toshiba in Japan

### Decommissioning Toshiba Training Reactor (TTR)

- Operated from 1962 - 2001
- Swimming Pool type Reactor designed by Toshiba
- Thermal output 100kW



## 2. Experience of Toshiba in Japan

### Toshiba has done whole package of D&D of TTR



# 3. Extend capability to commercial NPP D&D

Larger, More Complicated Project which needs Risk management

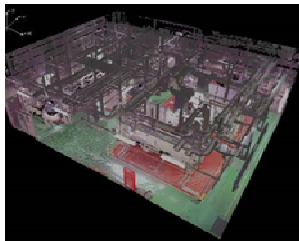
Develop Technologies and Add Experiences of US and Europe through the Alliance with AECOM, IHI, Westinghouse



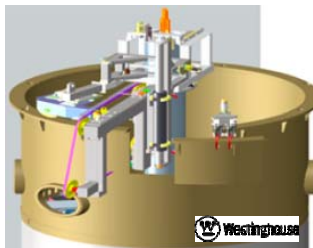
Risk Management Capability  
..... and more



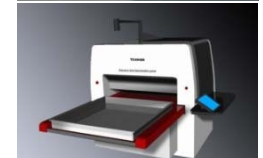
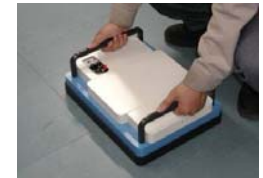
Characterization technology



Segmentation & Packaging technology



Surveillance technology



# Summary

## Toshiba, Westinghouse

Last 20 years

### Planning, Site work

- Research Reactor D&D
- >20 feasibility studies
- PWR/BWR/Graphite
  - CI Segmentation,
  - System Decon.
  - Waste treatment
- Academy, Regulatory study

### Storage facility

### Disposal facility

Last 10 years - Present

### Zorita

- Feasibility - Detail planning (2003 - 2010)
- Site Preparation work (2007~2017)
- CI, RV Segmentation, Packaging (2011-March 2015)

### Chooz A

- CI, RV, Thermal Shield Segmentation, Packaging (2017 - ?)

Next 20 years(?)

### Japanese NPP

- Feasibility study
- Characterization
- Detail planning
- Site Preparation work
- CI, RV Segmentation, Packaging
- Fuel storage
- Waste storage, treatment  
..... etc.

## AECOM

- NPP Decommissioning, Nuclear Facility Decommissioning
- Disposal Site Design, Construction, Operation,
- Risk Management Capability ..... and more

## IHI

- Remote handling technology for high dose rate work
- State of the art technology for decontamination, .... and more

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**Visit Toshiba, IHI, AECOM booth  
in Japan Pavilion**

**to find more Technology and Capability!**



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