
Dismantling of the RPV and Internals at Barsebäck 1 and 2

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Agenda

- Introduction
- Background
- Segmentation
- Waste management
- Time schedule
- Staffing
- Conclusions

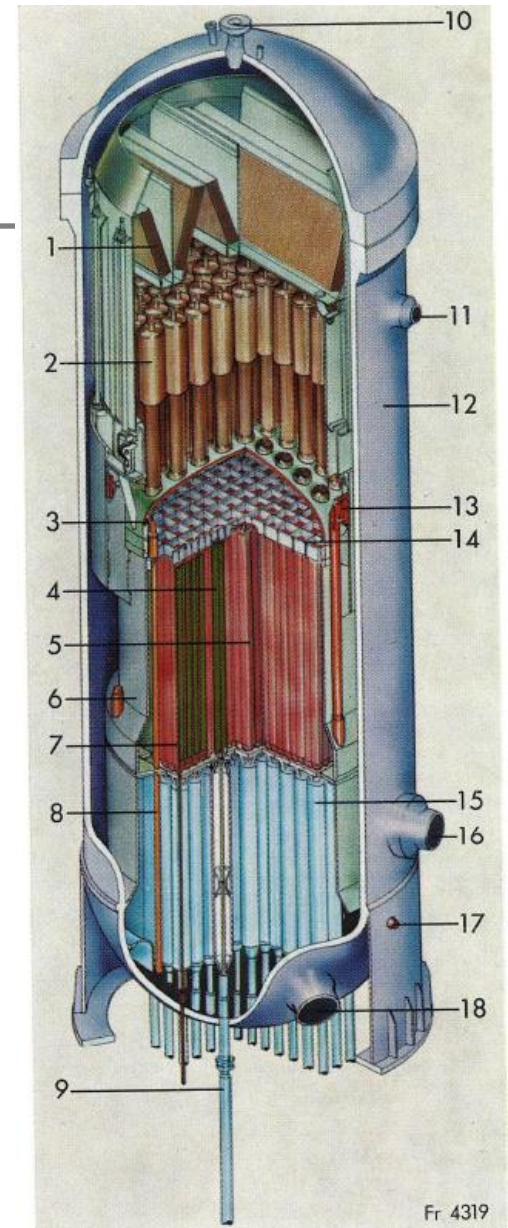
Introduction

- Barsebäck 1 and 2
(B1 & B2)
- ASEA-Atom BWR:s
- Electrical effect
620 MW
- B1 closed 1999
- B2 closed 2005



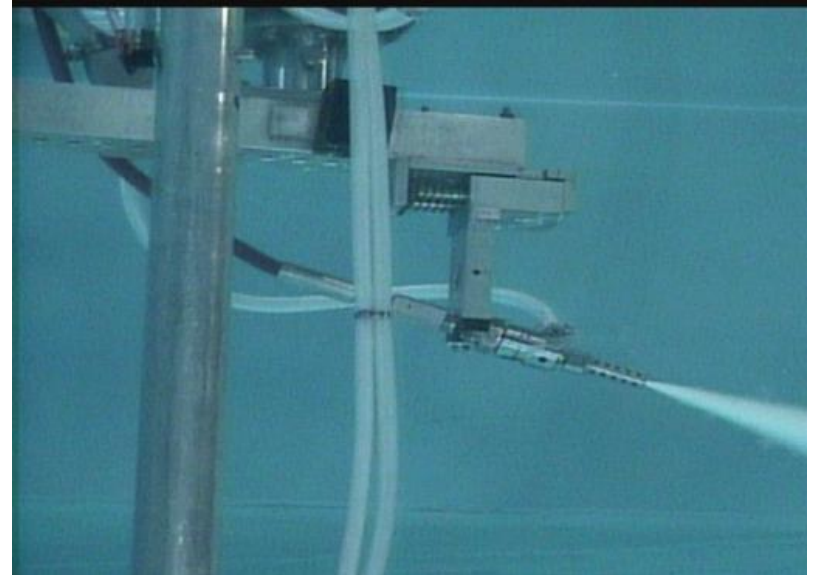
Background

- Basis for strategic decision:
Handling of RPV and Internals
 - One-piece removal
 - Segmentation
- Determine volumes for the expansion of SFR
- Define year for placement of segmentation contract



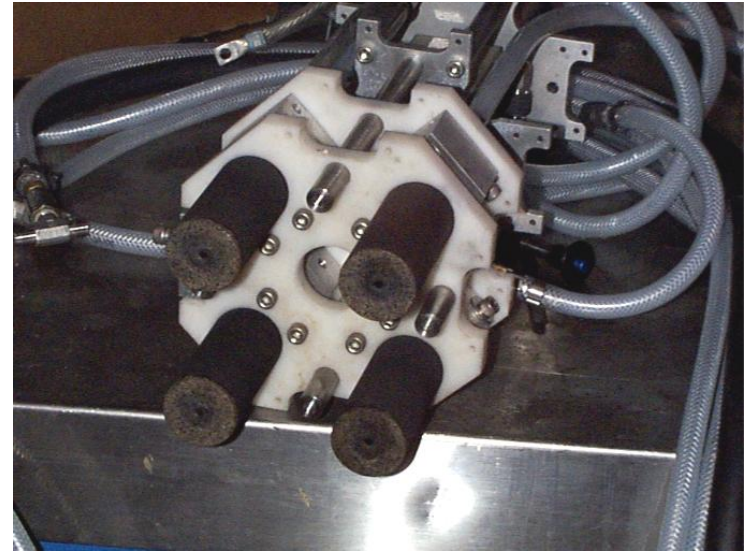
Segmentation methods

- Thermal techniques
 - Plasma Arc Cutting
 - Oxy-fuel Cutting
 - MDM
- Mechanical techniques
 - Shearing
 - Band sawing
 - Circular sawing
- Other
 - Abrasive Water Jet Cutting



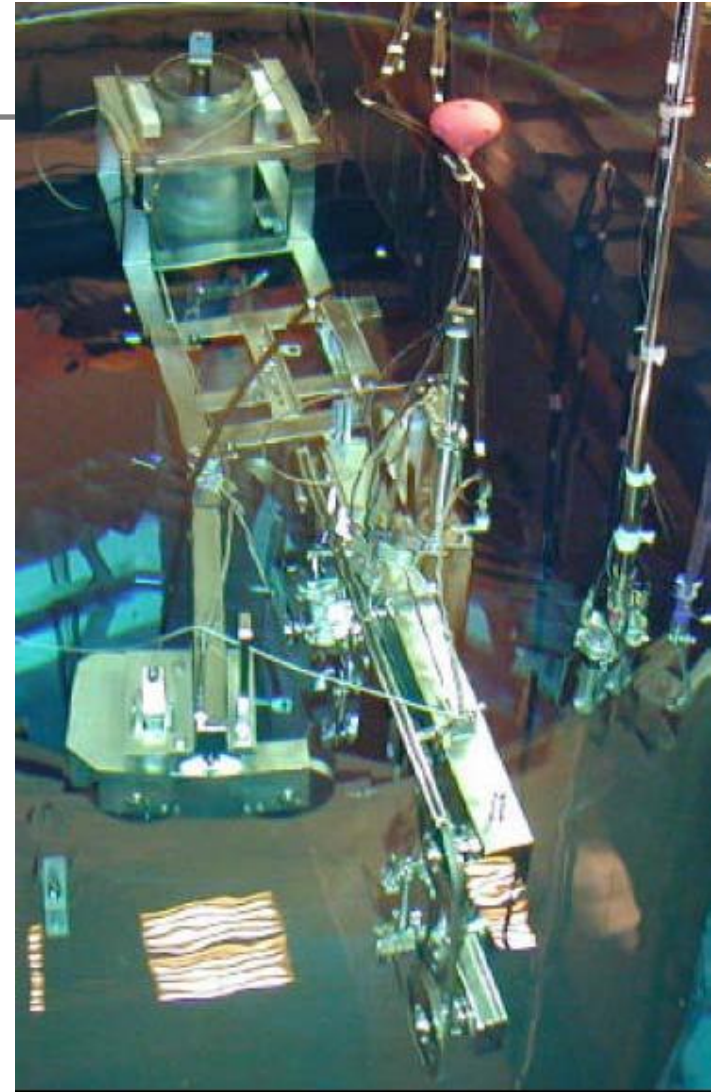
Segmentation methods – pros and cons

- Thermal techniques
 - Fast
 - Costly
 - Radiation and visibility issues
- Mechanical techniques
 - Minor secondary waste
 - Easy to install
 - Reliable
 - Limited cutting thicknesses



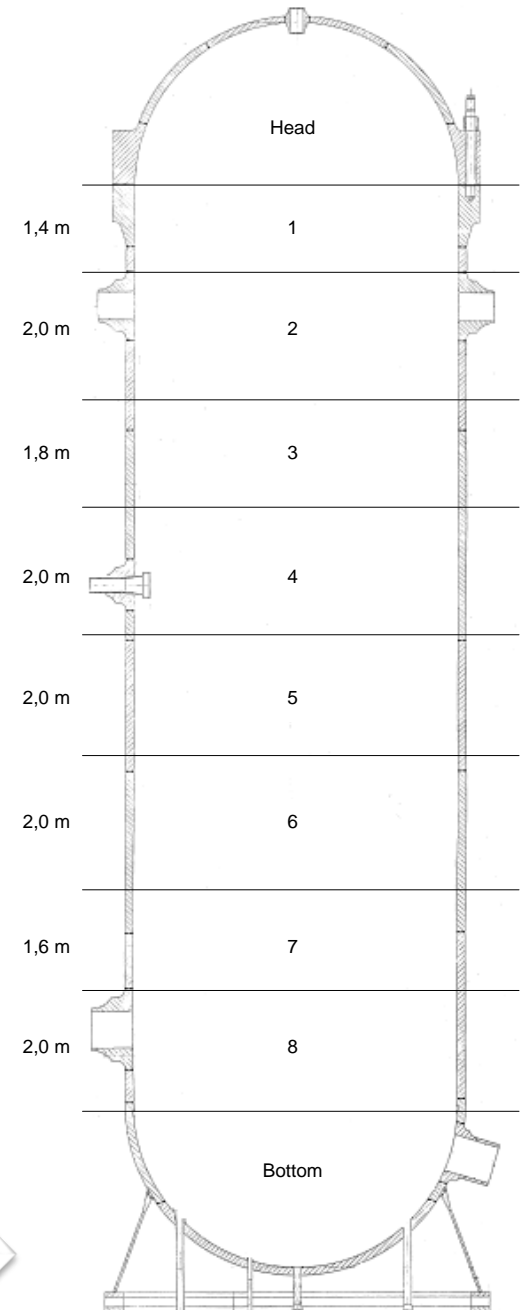
Internals segmentation

- Mechanical cutting program recommended due to extensive Westinghouse experiences
- Wet segmentation in internal parts pool using band saw, shear, tube cutter and circular saw
- Waste packed in the pool
- Done in parallel for B1 and B2



RPV segmentation

- A combination of dry thermal and wet mechanical cutting
- Bottom modified for filling/draining
- Auxiliary support systems installed
- PAC used to cut annular pieces from the RPV
- Height of annular pieces < 2 m, avoiding nozzles



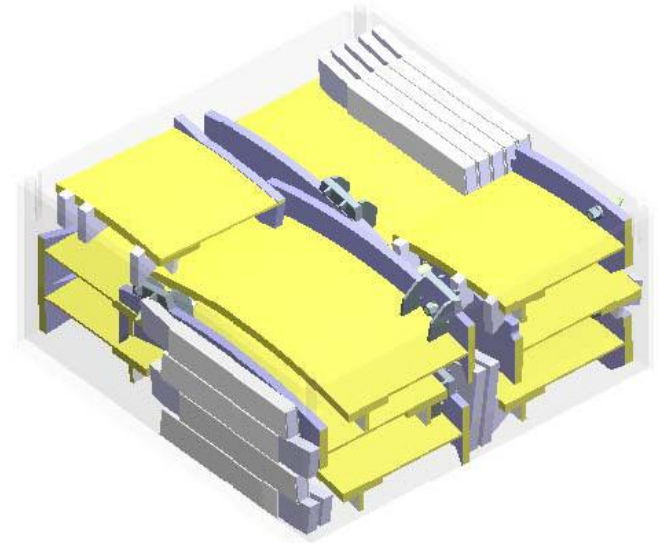
RPV segmentation

- Holes made with MDM/drill for lifting of the rings
- Annular pieces moved to internal parts pool
- Further segmented with band saw and packed into containers
- Done in series for B1 and B2 to utilise lessons learned



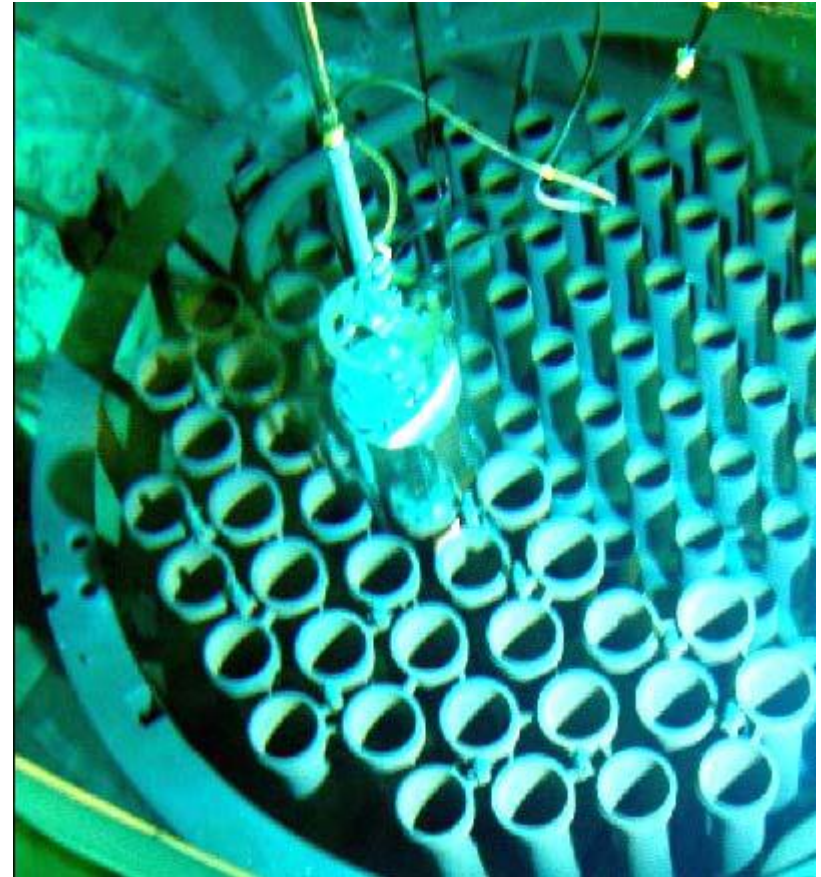
Packing

- Goal: Achieve optimal packing of containers to reduce costs
- Previous Westinghouse experience:
 - Internals
 - 0.4-1.1 ton/m³
 - RPV
 - 1.0 ton/m³



Activity contents

- Long-lived to SFL:
 - Core grid
 - Core shroud
 - Core shroud cover
 - Core spray
 - Part of control rod guide tubes
- The rest to SFR



Containers

- BFA-tank
 - 1.3 x 2.3 x 3.3 m
 - For long-lived LILW
- Large Steel Box
 - 1.2 x 2.4 x 2.4 m
 - For short-lived ILW
- ISO Container
 - 6.1 x 2.4 x 1.3 m
 - For short-lived LLW



Time schedule

- Prerequisites: 3 shifts 24 hours per day
- Internals segmentation done in parallel for B1 and B2
- RPV segmentation done in series for B1 and B2
- Design & manufacturing phase 2 years
- Segmentation campaign 2.5 years



Staffing

- Manpower on site during the different phases:
 - Crew of 11 during the internals segmentation
 - Crew of 14 during the RPV segmentation
- Functions:
 - Project management
 - Engineers (Installation, quality and technical lead)
 - Operators (Tools and crane)
 - Decontamination
 - Health physics
 - Supervision



Conclusions

- Proven technology available for segmentation of RPV and Internals
- The contract for segmentation should be placed no later than 2017 in order to start establishment on site 2020
- Total waste amounts:
 - 220 m³ in SFL
 - 1 360 m³ in SFR

