Foto: Kävlinge Municipality

The ”icon” of nuclear power in Sweden

Anna Sällberg, Environmental Engineer
Maria Taranger, Communication Officer

Barsebäck

The beginning and the end

First connection to the grid: May 15, 1975 / March 21, 1977

Contractor:	**ASEA Atom (Westinghouse Electric Sweden)**
Production, unit 1:	**Total 93,4 TWh net (1999)**
Production, unit 2:	**Total 108 TWh net (2005)**
Status, unit 1:	**permanently shutdown since 30 Nov 1999**
Status, unit 2:	**permanently shutdown since 31 May 2005**

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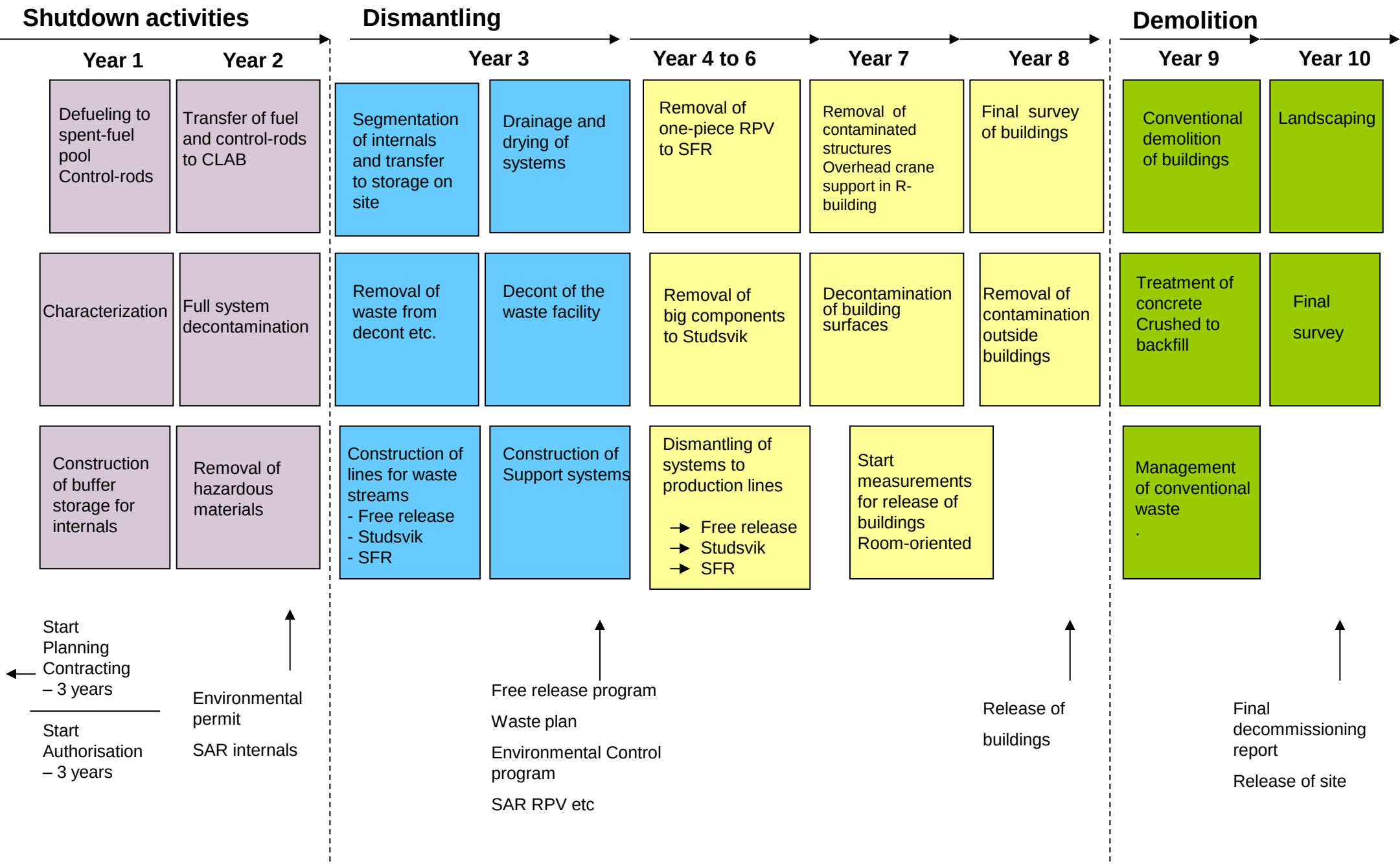
Shutdown activities
Dismantling
Demolition
Year 1
Year 2
Year 3
Year 4 to 6
Year 7
Year 8
Year 9
Year 10
Defueling to spent-fuel pool Control-rods
Transfer of fuel and control-rods to CLAB
Segmentation of internals and transfer to storage on site
Drainage and drying of systems
Removal of one-piece RPV to SFR
Removal of contaminated structures Overhead crane support in R-building
Final survey of buildings
Conventional demolition of buildings
Landscaping
Characterization
Full system decontamination
Removal of waste from decont etc.
Decont of the waste facility
Removal of big components to Studsvik
Decontamination of building surfaces
Removal of contamination outside buildings
Treatment of concrete Crushed to backfill
Final survey
Construction of buffer storage for internals
Removal of hazardous materials
Construction of lines for waste streams
- Free release
- Studsvik
- SFR
Construction of Support systems
Dismantling of systems to production lines
→ Free release
→ Studsvik
→ SFR
Start measurements for release of buildings Room-oriented
Management of conventional waste
.
Start
Planning
Contracting
– 3 years
Start
Authorisation
– 3 years
Environmental permit
SAR internals
Free release program
Waste plan
Environmental Control program
SAR RPV etc
Release of buildings
Final decommissioning report
Release of site

Barsebäck Conditions

- Swedish management system for operational waste can be used for dismantling waste.
- Repository ready 2028
- Fuel and control-rods are transported to the interim storage
- Clean plant, few fuel leakages
- Time to make studies in the planning process
- Dismantling of unit 1 and 2 will be carried out as a joint project
- Good dialogue with the authorities
- Co-operation in national and international forums to get experience and knowledge
- Compensation for Service operation and Available funds

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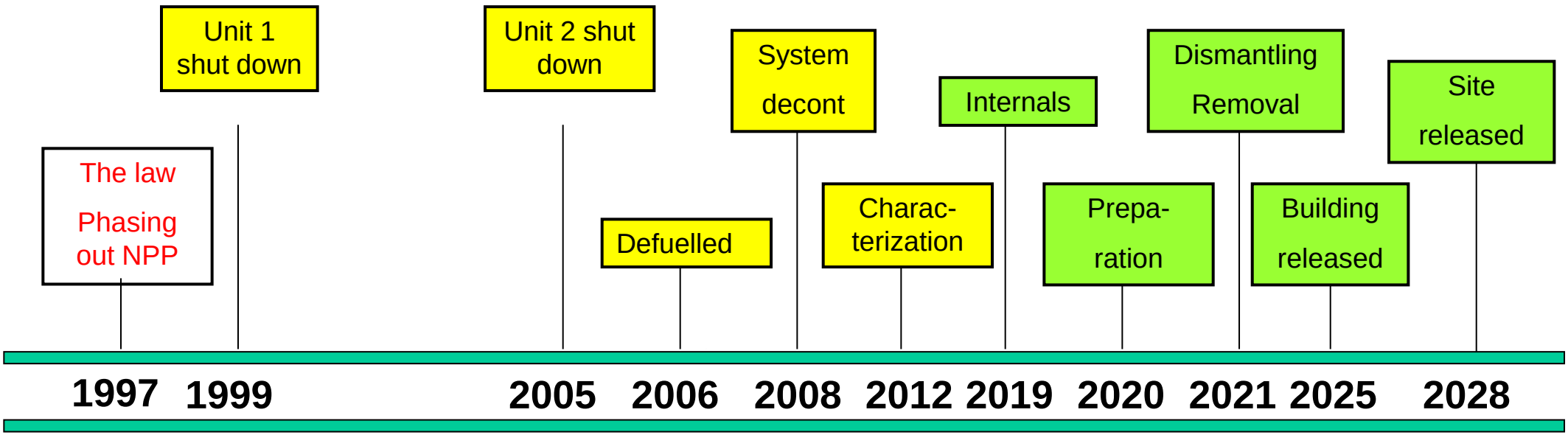
Planning highlights:



Operation	Shutdown	Service	Dismantling

Staff: 450	350	250	125	50	XX

The Licence cover all steps The Safety Analyse Report have to be developed for each step

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Studies conducted for the decommissioning

- Cost estimate for the decommissioning
- Dismantling and removal of the entire reactor vessel
- Segmentation of the reactor pressure vessel and internal parts
- Radioactive inventory of Barsebäck 1 and 2
- Mapping of radioactive contamination Part 1
- Disposal of large turbine components
- Demolition of the reactor building
- Demolition of the turbine building and other buildings
- 3D model comprising land and buildings
- Dismantling and waste logistics

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Lessons learned and strategy

- Appropriate requirements and regulations
- Available funds and estimated costs
- Available spent fuel storage
- Available radioactive waste storage
- Perform a site characterization of high quality
- Maintain the “Safety-first” culture and focus on risk management.
- Dismantle in big pieces and use proven methods
- Carry out the dismantling on an industrial scale with logistic for “rip and ship”
- Keep control of the project within your own organization
- Involve stakeholders

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Right now

- Building interim storage, ready in June -16
- Segmentation of the internal reactor parts starts in the summer of 2016
- Segmentation finished 2019
- Waste management – handling operational waste
- New security equipment installed
- Removal of fuel racks
- Exciting to do something for real!

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Thank you for your attention!

Ongoing and *planned tasks*

- Determination of requirements for demolition and clearance
- Control program for the release
- *Service systems during the dismantling and demolition*
- *Decontamination of pipes and tanks of the waste facility*
- *Mapping of radioactive contamination Part 2*
- *Starting up the application for regulatory permits*

Projects

- Removal of fuel
- Adapting the plant to the service operation
- Full system decontamination
- Removal of control rods and probes
- Removal of the fuel racks
- Processing of waste from operation
- Segmentation and storage of the RPV internals, project HINT

Procedure for Free Released Site