NUCLEAR DISMANTLING AND WASTE MANAGEMENT AT EWN

WENRA Workshop on Regulatory Aspects of Decommissioning
5th November 2019  |  Gudrun Oldenburg, EWN
The EWN Group

EWN Entsorgungswerk für Nuklearanlagen GmbH (EWN)

- Owned by: Federal Ministry of Finance
- Task: Decommissioning, Dismantling and disposal of the Greifswald and Rheinsberg NPP, Operation of Interim Storage Facility North (ISN), Projects in Germany and abroad
- Staff: 945 employees (79 apprentices and students)
- Budget 2019: ca. 160 million €

Jülicher Entsorgungsgesellschaft für Nuklearanlagen mbH (JEN)

- Funding: Federal Ministry of Education and Research and Ministry of Innovation, Higher Education and Research North Rhine-Westphalia
- Task: Decommissioning, dismantling and disposal of research reactors in Jülich and the disposal of radioactive material

Kerntechnische Entsorgung Karlsruhe GmbH (KTE)

- Funding: Federal Ministry of Education and Research and Ministry of Finance and Economics Baden-Württemberg
- Task: Decommissioning and dismantling of nuclear facilities at the Karlsruhe site (e.g. reprocessing plant and research reactors) and disposal of radioactive material
Site view
Greifswald NPP decommissioning project

- 1990: Shut-down of all units
- 1991: Decision for direct dismantling with own staff
- 1995: Decommissioning licence issued
- 2006: free of nuclear fuel
- 2009: dismantling of reactor pressure vessels completed
- 2013: last large components dismantled
- 2036: complete decontamination of buildings scheduled
- Konrad repository opens probably not before 2027
Interim Storage Facility North (ISN)
Interim Storage Facility North (ISN)

- **Dimension:** 240 x 140 x 18 m
- **Function:** Storage of spent fuel (hall 8) and low and medium radioactive material (halls 1 -7),  Conditioning of radioactive material (in caissons)
- **Masses:** ca. 27,000 tons of radioactive material and 585 tons of spent fuel and vitrified waste in 74 CASTOR®-casks (in hall 8)
Interim Storage Facility North (ISN)

Steam generators, shielding and transport devices and reactor pressure vessel in hall 7

Castor ® casks in hall 8
Interim Storage Facility North (ISN)
New storage facility ESTRAL

Current situation

• 74 casks stored
• Casks delivered between 1999 and 2011

Next steps

• Construction of new spent fuel storage facility (ESTRAL) for all casks (due to increased safety/security requirements)
• Storage until availability of final disposal site
• Removal to repository
Material management at active workshop
Cutting

"Warm" workshop - Cutting techniques

Different band saws  Hydraulic shears  Thermal cutting box

Cable shredder
Material management at active workshop
Decontamination

”Warm” workshop - Decontamination techniques

Chemical and electrolytic decontamination baths

Box for high pressure water blasting

Box for abrasive decontamination with steel gravel
Material management
Decontamination and water treatment

"New" decontamination and water treatment workshop

Evaporator facility

“In-drum” drying facility
(2 chambers for 4 drums each)

Chemical, ultrasonic and electrolytic decontamination baths
NPP Greifswald – decommissioning
Dismantling of activated components

Central Decontamination and Water treatment plant
Warm Workshop
Fragmentation Hall
Clearance

Facilities for measuring the residual material before release
Dismantling of the turbine hall
Site reuse: Construction hall of Liebherr
Dismantling of large components
Steam generators
Dismantling of large components
Steam generators
Dismantling of reactor pressure vessels
Remote dismantling
Decontamination of buildings
Decontamination of buildings
Decontamination of buildings
Decommissioning and dismantling
Recent works

Demolition of stack 1 with connecting duct (2010-2016)

- 2010 Closure of the stack
- 06/2016 Decontamination (brushing/shaving)
- 04-07/2016 Clearance measurements
- 09-10/2016 Demolition with hydraulic shears
Decommissioning and dismantling

Recent works

Demolition of stack 4 (2017)

- Demolition realized 03-04/2017
- Technology was tested that might be applied to stack 2 (with necessary adaptations)
Decommissioning and dismantling
Recent works

Demolition of stack 2

05-08 2019  Stack demolished
Other technology applied
(less space as for stack 1)
German repository KONRAD

- Repository for low-level and intermediate-level radioactive waste
- Total capacity: **303,000 m³**
- Start of the emplacement at the earliest in **2027**, Emplacement operation will take at least **30 years**
Wir setzen Maßstäbe. Mit Sicherheit.

Thank you for your attention!