RADIOACTIVE WASTE MANAGEMENT IN GERMANY

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Nuclear Power in Germany

- Commercial Nuclear Power use since the late 60’s
- 17 NPPs with 20,200 MWe in operation
- Plant Lifetime recently extended to 40 – 46 Years
- All Radioactive Waste disposed in Deep Repositories
- The Federal Government must provide Repositories
- It can rely on a Third Party for discharging its Duties
- Three Deep Geological Repository Projects:
  - Gorleben (SF/HLW)
  - Konrad (LILW) under construction
  - Morsleben (LILW) phased out
German HLW/SF Management Concept

- Interim Storage in NPP Pools (limited capacity)
- SF reprocessing until 2005
- Thereafter SF disposal only
- Pu recycling as MOx in LWR
- 3 Central SF/HLW Storage Facilities
- 13 SF Dry Storage Facilities at the NPPs
- Conditioning for Disposal (PKA) (already built)
- Deep Geological Disposal
Gorleben Project – Milestones

22.02.1977  Gorleben Site Selection (NEZ)
April 1979   Start of Site Surface Survey
1980/1981    Four deep boreholes drilled
Mai 1983     Comprehensive suitability
             statement by PTB
Sept. 1986   Ground-breaking Shaft 1
Oct. 1996    Connection between Shaft 1 & 2
             established (840-m-level)
             Thereafter infrastructure area
development, characterization of
Exploration Area 1 (EB1)
01.10.2000   Stop of site characterization
             Thereafter stand-by operation
01.10.2010   Gorleben site exploration
             reassumed (EB1)
Gorleben Project – Site Exploration Mine
German LILW Management Concept

- NPP waste conditioned and stored on site
- Waste from industry, medicine, conditioned and/or stored at Collection Depots
- 3 Central LILW Storage Facilities
- 17 Waste Storage Facilities at the NPPs
- 10 Collection Depots of the Federal States
- Deep Geological Disposal at Konrad
Konrad – Deep Repository Construction

1965 / 1976  Iron ore mine (~7 mil. t)
             Deposit: ~1.4 billion t
1975        Preliminary site survey
1982        Site Suitability Statement and
            License Application submitted
1992 / 9    Public hearing (75 hearing days)
1993 / 3
2000 / 2001 Consensus Agreement
             - Finishing licensing procedure
             - No immediate enforcement
2001 / 8    Radiation Protection Ordinance
             amendment
→           License application amendment
2002 / 6    License Granted
2002 / 2008 Litigation
2011        Repository Construction
2018?       Disposal Start
Morsleben Repository for LILW

- Repository of the former German Democratic Republic
- Became a Federal Repository after German Reunification in 1990
- Used as LILW repository until 1998
- Currently Licensing for Decommissioning
- Very limited Activity Content
Morsleben - Repository Milestones

1970  Bartensleben mine selected as repository
1971  Start of trial disposal (LLW)
1974  Repository construction license
1981/1986  First and second permanent operation licenses
1990 / 10  Morsleben becomes a Federal Repository, operated by DBE
1991  Disposal stop, refurbishment
1994  Disposal restarted
1998 / 09  Waste acceptance interrupted
1999 / 05  Waste disposal terminated
2000 / 11  Anticipated backfilling – license for site closure to follow
2010  Public hearing for closure
2012  License for closure?
Progress was recently achieved in all German Repository Projects:

- The site exploration at Gorleben was reassumed
- Survey results for site suitability statement (positive or negative) shall be available at around 2014
- A preliminary safety case for Gorleben is under way, and will deliver a site suitability statement by 2012
- The Konrad deep geological repository (LILW) is under construction
- The public hearing for closure of the Morsleben LILW repository will be carried out in the next years