Licensing process of geological disposal in France

Round Table Discussion
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Legislative framework


• Completed by decree of 28 April 2008 (decree derivated from National Plan for Waste Management)

Set requirements for the management of radioactive materials and waste and more specifically plan development of geological disposal and subsurface disposal
The authorisation process for GD

Defined by the law of 28 June 2006, with a central role of the Parliament

- Geological Disposal is considered as a reference solution disposal for HLW, furthermore:
  - studies have to be carried out in an underground laboratory
  - A public debate is necessary prior the licensee submit the license application for creation

- Parliament will:
  - authorise the GD as a nuclear installation
  - authorise the closure of the disposal (a law is required)
  - establish the conditions for reversibility (minimum reversibility period of 100 years set by law)
Reversible geological disposal: Research and studies are conducted so that the disposal can be in operation in 2025.
Reversible geological disposal schedule for authorization

R&D program to continue in the underground laboratory of Bure

2005
feasibility of GD in Cox formation

2009
Detailed investigations

2013
public debate on sitting of underground and surface facilities

2014
license application for creation
- Safety assessment
- Waste acceptance criteria
- Assessment of environmental and radiological impact

2016
Law on reversibility

2025
commissioning

Construction of GD

• suitable interest zone
• options for design, LT safety, operational safety & reversibility
• updated waste inventory model
• options for LT storage

Authorization for creation (review ASN, CNE, Parliament …)
Reversible geological disposal / Regulatory review schedule

2006
ASN position on:
- separation and transmutation
- Long term storage
- GD “dossier 2005” related to feasibility in Cox formation
- ASN gives its view on main steps for GD development

2009
End

2010
End

2013
Public debate

2014
License application for creation

2025
Commissioning

Law on reversibility
- ASN review of license application for creation
- ASN position on reversibility

Authorization for creation
(review ASN, CNE, Parliament ...)

ASN review of license for operation

New authorization for UL

ASN position on options for design (LT safety, operational safety reversibility)

Law on management of RW

ASN position on suitable interest zone for detailed investigation

Gvt decision on the zone for detailed investigations

License application for creation

ASN position on R&D program in UL

End 2010

End 2010
New version of the Safety Guide issued in 2008 by ASN specifies safety principles and criteria for siting and designing a repository facility:

- Requirements for site selection
- Post closure safety functions of the repository
- Iterative evaluation method to demonstrate the safe nature of the facility

Regulatory requirements for disposals under development
• Reversibility concept

• Monitoring of host rock during construction and closure

• Modeling of phenomena (host rock behavior, hydrogeology, RN transfers, environment around the GD ...)

• Investigation in underground laboratory: gas generation, technical solution for excavation, sealing...
Reversibility concept

- Objectives of reversibility:
  - Retrieving waste
  - Preserving choices for future generations
    - Complex issue (from technical and societal point of view)

- Andra’s approach
  - Define technical options and decisional process
    - Scientific studies and experiments to be carried out on engineered components behavior and waste behavior
    - Precise technical limits and define specifications (operational process, waste packages, engineered components ...)
  - Define a scale for reversibility (work within NEA)
  - Communication with the public: understand their concerns

- Issues for the regulator:
  - Reversibility must not have unacceptable adverse effect on safety
  - Demonstrability of feasibility of reversibility (eg: retrievability of deteriorated waste ...)

Reversibility concept as defined by ANDRA

- 5 main levels for reversibility:
  - Waste conditioning, surface storage
  - Disposal in operation: emplacing waste (waste easily retrievable)
    Going through this level requires regulatory decision
  - Disposal in operation: partial backfilling
    Will probably need ASN authorization (within the usual authorization process for NBI modifications)
  - Post-closure: waste still retrievable (mining work necessary)
    Going through this level requires regulatory decision - Parliament
  - Post-closure, passive safety: waste can be deteriorated but can still be retrieved by mining work
CONCLUSIONS

• Law of 28 June 2006 & national plan for waste management define:
  • key decision making points for the development of the GD
  • main studies to be carried out by ANDRA

• Studies complementary to GD are carried out:
  • Partitioning and transmutation: research is conducted in relation with research on GenIV reactors
  • Interim storage: R&Studies conducted for new storages or modified storages to be created in 2015

• ASN involved in international thinking on regulatory issues for GD development
  • European level: ASN chairman of EPG working on content of the SC, Wenra project for setting reference levels
  • International level: IAEA, Regulator Forum NEA