Exceptional service in the national interest

URF N̶ ̶̶admap

Roadmap for Developing a Geological Disposal Program

Robert J. MacKinnon
Sandia National Laboratories

. Meeting of the Underground Research Facilities Network (URF – Network)

IAEA Headquarters, Vienna, Austria, 18ⁿᵈ- 22ⁿᵈ April 2016

Sandia National Laboratories

URF Network Roadmap

- **Idea for roadmap was formulated from discussions at the IAEA Workshop in Albuquerque, NM, 2014 and at the Annual IAEA URF Network Meeting in Daejeon November 17-21, 2014**

- **Roadmap has several uses:**

  - **Reach a consensus by the URF Network on the set of activities and technologies needed for repository development**

  - **Provide a vehicle to forecast training and workshop needs**

  - **Provides a framework to help plan and coordinate URF Network activities**

URF Network Roadmap Report*

- **Describe the different phases and activities in a repository development program for the disposal of HLW/SNF –**

- **Identify the links between research and development (R&D) conducted in URLs and the overall repository development program**

- **Describe the role of URLs in the development of new repository technologies and provide examples of these technologies**

* IAEA-TECDOC-1755 (published in 2014): Planning and Design Considerations for Geological Repository Programmes of Radioactive Waste)

Repository Development Timeline

Concept Evaluation

Evaluate Disposal Concepts; FEPs; Develop and Demonstrate Technologies; Preliminary RD&D

Note:
Stages and phases are not necessarily discrete but often overlap
Stages and phases are typically iterative and not simply sequential
Stages and phases can differ from country to country

Site Selection

| Elicitation of Interested Host Communities | Initial Site Evaluation | Candidate Sites Evaluated | Preferred Site Selected |

Site Characterization

Characterization of Selected Site

Repository Development

| Safety Case/License Application Development & Submittal | Construction & Monitoring | Operations & Monitoring | Closure |
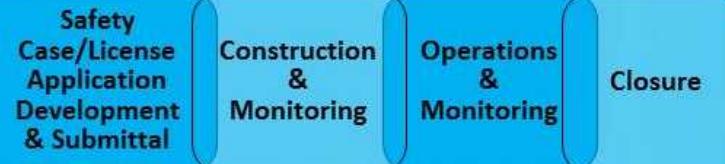
Generic RD&D

Site Specific RD&D

Site Characterization, Repository Design, Safety Evaluation

Repository Development Phases

Repository Development Program and its Major Activities

Development Activities

Member A at beginning of their program

Member A interested in this activity

URF Member A

Time

Roadmap Report

The Need for a Roadmap – the Roadmap will help answer the following questions.

Where are we? The current understanding of how URFs support disposal will be summarized by presenting a Repository Development Timeline/Matrix

Where are we going? The URF Network wants to:
Encourage the preservation, sharing and transfer of knowledge and technologies,
Work on solutions for Member States currently without URFs,
Supplement national efforts and promote public confidence in waste disposal schemes, and
Contribute to the resolution of key technical issues.

How will we get there? Repository development phases and objectives, activities, and outcomes:
Organize information to allow the URF Network to readily identify what solutions are and are not available
Describe technologies and disposal concepts and their readiness for deployment
Describe key technical issues that have been resolved and those that are outstanding
A summary of URFs and technologies and the types of investigations and results that exist

The roadmap will be used to identify, prioritize, and plan future URF Activities