Introduction of the IAEA URF Network and Role of the KAERI

Geon Young Kim*, Kyungsu Kim, Min-Hoon Baik, and Young-Chul Choi
Korea Atomic Energy Research Institute, Daedeok-daero989ben-gil 111,Yuseong-gu, Daejeon, Republic of Korea
*kimgy@kaeri.re.kr

1. Introduction

IAEA Member States operating a nuclear power plant, or planning to establish future use of nuclear power, must implement solutions for the back end management of resulting intermediate level waste, high level waste and/or spent nuclear fuel. Geological disposal offers an internationally accepted solution for safe and sustainable management of such waste. All URFs (Underground Research Facilities) play an important role in the development of deep geological repository systems for the disposal of long lived and high level radioactive waste, both from a scientific and technological point of view and for building public confidence [2]. The IAEA Underground Research Facilities Network (URF Network) was formally initiated in 2001 to address the needs of all Member States involved in the development of civilian nuclear technologies. The URF Network provides its members with a platform to assess and share best practices in developing, evaluating and implementing geological disposal solutions. This paper reports on current status of the IAEA URF Network and role of the KARTI and KURT (KAERI Underground Research Tunnel) which is currently the only URF in Korea.

2. Current Status of the URF Network

2.1 Role of the URF Network

A URF or URL is an underground facility in which site characterization and testing activities are carried out along with technology development and demonstration activities in support of the development of deep geological repositories for radioactive waste [2]. The URF Network establishes a community of practice and learning for geological disposal. At its inception in 2001, the Network focused on the role of URFs in supporting geological disposal developments. After over a decade of operation, the URF Network has reassessed its role to deliver support to Member States needing solutions to the back end management of intermediate level waste, high level waste and spent nuclear fuel [3].

2.2 Scope of the URF Network

The scope of the Network is to provide and maintain a:

- Community of practice and learning for geological disposal.
- Platform to assess and share best practices in developing, evaluating and implementing geological disposal solutions.
- Platform which emphasises the role and use of URFs to support successful geological disposal implementation.

Best practices begin with understanding of high-level requirements (safety, security, safeguards, intergenerational equity and sustainability) and the resulting governance needs to achieve successful disposal. Network activities focus on methods and technologies to site, design, and license a disposal facility that meets these high-level requirements, as well as prepare for its implementation. This includes consideration of viable approaches in establishing national policies, strategies, and gaining and maintaining project acceptance by relevant stakeholders. Relevant information on construction and operation becomes increasingly important as some Network members progress toward commissioning a disposal facility [3].

The URF Network organizes an annual meeting, whose primary purpose if to tailor and plan the URF Network activities to meet timely Network members' needs. The actual delivery of the URF Network programme of activities to meet the Network members' needs is then subject to discussion with all attendees of the annual meeting. Implementation can be through workshops, meetings, scientific visits and fellowships, and developing information support, as e.g. reports, presentations at international meetings, or short articles published online [3].

2.3 Members

The Network is open to accession by organizations with specific responsibilities related to establishing, developing, providing the scientific and technical basis for, and/or implementing deep geological disposal projects for radioactive waste [3]. Accession to the Network by any such organizations is formalized through a letter of intent addressed to the Director of the IAEA Division of Nuclear Fuel Cycle and Waste Technology. At present, the URF Network members are from Argentina, Armenia, Brazil, Belgium, Bulgaria, Canada, Chile, China, Croatia, Czech Rep., Finland, France, Germany, Hungary, India, Japan, Kazakhstan, Korea Rep., Lithuania, Mexico, Netherlands, Pakistan, Philippines, Poland, Romania, Russian Federation, Slovakia, Slovenia, South Africa Sweden, Switzerland, Ukraine, United Kingdom, and USA. The contact person for each organization is informally communicated to the IAEA Network Secretary, and serves as information point for all correspondence related to the Network.

3. Role of the KAERI and KURT in the URF Network

Korea Atomic Energy Research Institute (KAERI) was assessed as a member of the URF Network in 2013. The 13th annual meeting of the URF Network was hosted by the KAERI and held in Daejeon, from 17 to 21 November 2014. During the meeting site visits were conducted to KURT and Gyeongju which will be organized by Korea Radioactive Waste Agency (KORAD). KAERI has been participating in projects of “Roadmap to developing DGR and how URFs can support this” and “Compendium of RD&D results carried out at URFs for Geological Disposal” under the URF Network. Especially, KURT is an important part of information sheet on existing URFs in these projects.

Fig. 1. Website of the IAEA URF Network [3].

ACKNOWLEDGEMENT

This research was supported by the Nuclear Research and Development Program of the National Research Foundation of Korea (NRF-2017M2A8A5014857), funded by the Ministry of Science and ICT.

REFERENCES

[1] IAEA, “The use of scientific and technical results from underground research laboratory investigations for the geological disposal of radioactive waste”, IAEA-TECDOC-1243, 1-7 (2001).

[2] OECD/NEA. “Underground Research Laboratories (URL)”, NEA/RWM/R(2013)2, 9-11 (2013).

[3] IAEA, “Underground Research Facilities Network for Geological Disposal-Terms of Reference”,https://nucleus.iaea.org/sites/connect/URFpublic.