## 23. USING NATURAL ANALOGUES TO BUILD STAKEHOLDER CONFIDENCE IN GEOLOGICAL DISPOSAL - A CATALOGUE OF NATURAL ANALOGUES FOR RADIOACTIVE WASTE MANAGEMENT

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In its generic Disposal System Safety Case, Radioactive Waste Management Limited (RWM, the UK implementor of a Geological Disposal Facility) notes the following in relation to analogues:

"Analogues can be helpful in demonstrating understanding of aspects of GDF performance and provide evidence that certain materials can survive for long periods. However, they do not provide conclusive proof that these materials will survive for the required periods in the environments of a particular GDF, as the conditions under which the analogue material has survived may not match those expected to occur or evolve in a GDF. Therefore, analogues will be used with caution, and can only ever provide supporting arguments in an Environmental Safety Case. Nevertheless, appropriate analogues can be helpful in providing a long-term practical demonstration to support the theoretical and mathematical arguments".

To provide a reference source of safety- relevant examples from natural systems that could be used to support a safety case, BGS and Bedrock Geosciences are working with RWM to produce a catalogue of natural analogues for radioactive waste disposal. Aimed at regulators, policy makers, managers, decision-makers and others involved in the waste management process who are not necessarily specialists in natural systems, the catalogue will be in the format of a set of "flyers" summarising key points of each natural analogue. It is intended to be suitable for the general scientific audience, and its scope includes all aspects of disposal relevant to the UK situation (a range of waste types and potential GDF host rocks are considered; examples are grouped into four main sections - the engineered barrier system, natural barrier system, radionuclide migration in natural systems, and natural analogues and the safety case).

For each analogue considered, information is provided as follows: (i) description of the specific aspects of components of a GDF that the natural or archaeological analogue system represents or is applicable to, (ii) summary description of the geoscientific characteristics of the natural analogue, (iii) key safety-relevant observations, (iv) a summary of limitations of the use of the analogue, (v) images of systems that can be used in RWM media with appropriate acknowledgement / accreditation, and (vi) a list of references where further information can be obtained.

Once complete and published, the catalogue could be used in conjunction with other forms of communication (web-based, social media) as part of a multi-pronged approach to reach a range of stakeholders. It could also act as an education tool.