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NUCLEAR ENERGY AGENCY RADIOACTIVE WASTE MANAGEMENT COMMITTEE

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SELECTED INTERNATIONAL BIBLIOGRAPHY ON REVERSIBILITY AND RETRIEVABILITY TO SUPPORT THE NEA "R&R" PROJECT

The present list of references was assembled during the period May 2007 -December 2010 in support of the work of the NEA Radioactive Waste Management Committee (RWMC) Project on Reversibility and Retrievability.

It is not intended to update this list any further. Most of the cited references were downloadable from the internet as of December 2010. The reader should be aware however, that electronic availability may change with the progress of time.

The list is provided to those who may want to undertake their own analysis. Although not exhaustive, the list will constitute for them a useful start. It is recommended that interested persons consult the website of the NEA "R&R" project (www.oecd-nea.org/rwm/rr) from which at term may be downloaded, inter alia, the Final Report of the project and the Proceedings of the International Conference and Dialogue organised in Reims (France) in December 2010.

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SELECTED INTERNATIONAL BIBLIOGRAPHY ON REVERSIBILITY AND RETRIEVABILITY TO SUPPORT THE NEA "R&R" PROJECT

About this document

Reversibility and retrievability are not new concepts. In 1969, the United States National Academy of Sciences, in its report to Congress *Technology: Processes of Assessment and Choice*, observed that: "Other things being equal, those technological projects or developments should be favored that leave maximum room for maneuver in the future. The reversibility of an action should thus be counted as a major benefit; its irreversibility, a major cost." One of the *Proposed Goals for Radioactive Waste Management*, in the NUREG-0300 document dated 1978 and prepared by a task group for presentation to the United States Nuclear Regulatory Commission, reads as follows: "If wastes are disposed on earth, their retrievability - assuming a technology as advanced as present - should not be precluded."

Interest in reversibility and retrievability has been increasing in a number of national contexts. In fact, as can be seen in the detailed list of references in the annex, there have been discussions of the subjects in almost every national repository programme. The example may be given of the conclusions of the 1998 report by an environmental assessment panel on the original Canadian repository concept. The panel stated that there was not yet sufficient societal acceptance of the concept to proceed with its implementation. Among the reasons given for this lack of acceptance was a desire on the part of many stakeholders for the concept to better accommodate monitoring, retrieval, recycling and the emergence of new technology. The eventual outcome of this panel report was the establishment of the Nuclear Waste Management Organization whose extensive consultations led to the formulation of the Adaptive Phased Management approach, in which reversibility of decision making and retrievability of spent fuel play important roles. Similarly, review, assessment and consultation have led in some other countries (notably France and the UK) to a greater programme focus on retrievability and reversibility.

The first major international publication on reversibility and retrievability was a result of a seminar on the subject held in Sweden in 1999. The proceedings of this seminar were documented in IAEA TECDOC-1187 (2000). The papers presented covered a wide range of topics related to the subject, and (until the publication of the Proceedings of the NEA's December 2010 International Conference and Dialogue on Reversibility and Retrievability expected in 2011), this report may still be considered the most comprehensive and detailed international reference on reversibility and retrievability. At approximately the same time, the European Commission sponsored a study called the *Concerted Action on the Retrievability of Long Lived Radioactive Waste in Deep Underground Repositories*; several of the contributors to this study presented papers at the Swedish conference. Subsequently, and based to a considerable extent on the work that had been represented in these two reports, the NEA published its summary report on the topic, *Reversibility and Retrievability in Geologic Disposal of Radioactive Waste – Reflections at the International Level* (NEA-3140, 2001), where the concept of reversibility was first established as a concept distinct from that of retrievability.

Subsequently, in addition to the various developments in individual national programmes, there have been two publications from international agencies that bear importantly on the topic. The first of these was a report entitled *Stepwise Approach to Decision Making for Long-term Radioactive Waste Management - Experience, Issues and Guiding Principles* (NEA-4429, 2004), which deals with topics related to adaptive, staged or stepwise decision making. The second was *Disposal of Radioactive Waste: Technological*

Implications for Retrievability (IAEA NW-T-1.19, 2009), which focuses on technical issues related to retrievability.

The list of references in the Annex includes the above references as well as several others, including working papers supplied by their authors. This material was gathered during the period September 2007-December 2010 in support of the work of the NEA Project on Reversibility and Retrievability (<u>http://www.oecd-nea.org/rwm/rr/</u>). Apart from two 2011 references¹ judged to be of particular significance, it is not intended to update this list any further. Most of the cited references were downloadable from the web as of December 2010. The reader should be aware however, that electronic availability may change with the progress of time.

The list is provided to those who may want to undertake their own analysis. Although not exhaustive, the list will constitute for them a useful start.

¹ Numbered in annex as 1.3.7 and 2.11.1.

ANNEX: SELECTED REFERENCES ON REVERSIBILITY AND RETRIEVABILITY TO SUPPORT THE CURRENT NEA PROJECT (last update: December 17, 2010)

1.0 International documents

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http://www.iaea.org/Publications/Booklets/ScientificForum3/scientificforum3.pdf

1.2.4. Document title: Retrievability of high level waste and spent nuclear fuel - Proceedings of an international seminar organized by the Swedish National Council for Nuclear Waste in co-operation with the International Atomic Energy Agency, Saltsjöbaden, Sweden, 24–27 October 1999, IAEA-TECDOC-1187, December 2000

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1.2.5. Document title: Monitoring of geological repositories for high level radioactive waste, IAEA-TECDOC-1208, April 2001

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http://www.ceaa-acee.gc.ca/default.asp?lang=En&n=0B83BD43-1&xml=0B83BD43-93AA-4652-9929-3DD8DA4DE486&offset=1&toc=hide (on-line only; not downloadable)

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