

# **The Concept of Oversight, its Connection to Memory Keeping and its Relevance for the Medium Term: The Findings of the RK&M Initiative**

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# Overview

- Introduction to the concept of oversight; ICRP-122
- Oversight and repository life phases; oversight in the short, medium and long term
- Measures of oversight in the medium term; connection to RK&M keeping; actual examples
- Preparing for oversight: Regulations, roles, responsibilities

# Oversight – a Key Concept

- Oversight is the new reference concept promoted by the ICRP and by the OECD/NEA for reconciling geological disposal with fundamental principles of radiological protection (see NEA-ICRP flyer)
- The International Commission on Radiological Protection (ICRP) has developed the international system of radiological protection used world-wide
- In publication ICRP-122 (2013): Radiological protection recommendations for geological disposal
  - Oversight is a crucial factor over all time scales

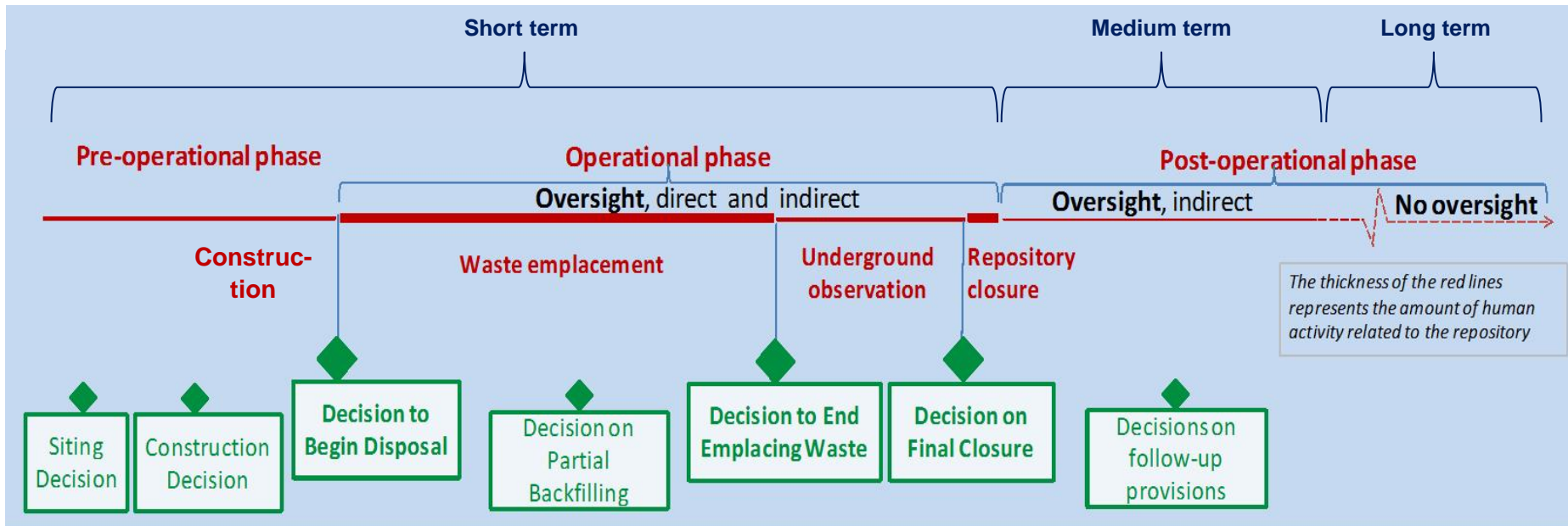
# RK&M Glossary Definition of Oversight

- “Oversight” is a general term for “watchful care” and refers to society “keeping an eye” on the technical system and the actual implementation of plans and decisions. Oversight includes:
  - regulatory supervision (such as control and inspection)
  - institutional control (e.g. monitoring)
  - preservation of societal records (such as archiving)
  - societal memory-keeping of the presence of the facility.

# RK&M Glossary Definition of Oversight

- Oversight is always by people (or institutions) and is complemented by the “built-in controls”, which the technical system carries out by itself.
- Three “levels” or categories of oversight are distinguished: Direct oversight (“waste accessible”) – Indirect oversight – No oversight.
  - The level of oversight has an impact on the application of the radiological protection system (ICRP-122).
  - The level of oversight has an impact on the availability/applicability of strategies for RK&M preservation.

# Oversight, repository life phases and reference time scales



- **Oversight:** Society “keeping an eye” on the technical system and on plans and decisions
- **Short term:** Up to repository closure (~ 100 years)
- **Medium term:** Period of oversight after repository closure (~ a few hundred years)
- **Long term:** After oversight is lost (up to time of concern in safety regulations:  $\sim 10^5$  years)
- There is no intention to lose oversight (ever)

# Oversight vs. Control in the Short, Medium and Long Term

- **Short term (up to closure):** Direct oversight like regulatory control in other nuclear facilities
- **Long term (beyond ~ x-1000 years):** No oversight
  - No control by humans (beware of “passive institutional control”)
  - Intrinsic control still in place, radiological protection in the long term must rely entirely on these  
(Intrinsic/“built-in” control = control carried out by system components, “passive safety”)

# Oversight vs. Control in the Short, Medium and Long Term

- **Medium term (after repository closure):**
  - Oversight and intrinsic control occur in parallel
  - Complementing each other – not replacing each other
    - Note: some oversight measures are forms of control
  - Era of oversight
  - To last as long as possible



# Measures of Oversight in the Medium Term

- **Monitoring:**
  - of release pathways, environment, ..., but also
  - of provisions, their implementation, etc.
- **Land use** (restrictions and) **controls**
- **Preservation of records**, archiving
- **Societal memory** keeping
- **Periodic review** of arrangements

# Measures of Oversight in the Medium Term – e.g. Monitoring

Monitoring report based on 1 technical + 1 societal study

- **Monitoring programmes for the short term:**

- Well advanced, stakeholder inputs
- Particular monitoring tasks and purposes:
  - Baseline monitoring
  - Host formation monitoring / Barrier system monitoring
  - Environmental monitoring
  - Compliance monitoring
  - Safeguards monitoring

# Measures of Oversight in the Medium Term – e.g. Monitoring

- **Monitoring in the medium term:** The above continued/adapted, where applicable, plus:
  - Monitoring of institutional/administrative provisions
  - Monitoring of implementation of provisions, measures, agreements
  - (Monitoring of socio-economic impacts of the disposal project)
  - Monitoring is a measure of oversight
  - Monitoring serves the purpose of RK&M preservation

# Measures of Oversight in the Medium Term – Actual Examples

- **U.S. DOE-LM: “Long-term stewardship” programme**
  - Monitoring/inspections/maintenance; Land use controls / Re-use projects, Records management, ...
  - Stakeholder support
  
- **Centre de la Manche: Decree (2003) for “surveillance” phase**
  - ANDRA: In charge of “plan de surveillance” (≈oversight plan), approved by the regulator
    - Yearly: reports on application of oversight plan
    - Every 10 years: New safety case and revised oversight plan
  - National regulator: Own oversight activities, e.g. inspections
  - Local Information Committee: Own oversight activities, e.g. independent monitoring

# Issues in the Concept of Oversight

- Does “oversight” end with “all memory being lost” or (earlier) when “watchful care” ends?
  - Could define it in the first way (“time of no oversight = when memory of disposal facility is lost”), BUT
  - ICRP: “Inadvertent human intrusion [...] is not a relevant scenario during the period of direct or indirect oversight”
- Sheer memory of the presence of the facility cannot be enough to constitute oversight
- “No oversight” = ~~“Memory lost”~~ “Lack of memory keeping”

# Oversight and Memory Keeping

- Oversight and memory keeping work hand in hand, reinforcing each other:
  - Memory is the condition for exercising oversight
  - Memory keeping is a basic measure of oversight
  - Exercising oversight, e.g. monitoring, is an effective way to preserve memory and to some extent even knowledge of the facility

# Responsibilities for Oversight in the Medium Term

- “Maintaining indirect oversight and memory of the facility should become a societal responsibility”
- Actual provisions can be organised under a variety of arrangements:
  - national nuclear safety authority (regulatory control strictu sensu), other regulators (local, national), environmental courts and bodies
  - advisory bodies to government/parliament, local committees
  - international bodies
- Roles and responsibilities should be assigned in the regulation
  - Transfer of responsibilities should be planned (cf. sites given to DOE-LM)

# Responsibilities for Oversight in the Medium Term – Current Regulations

- Primarily for the (very) short term; for medium term sparse
- Prevalent causes for loss of RK&M are lack of human attentiveness/actions and poorly carried out regulatory oversight
- Loss of RK&M often takes place during transitions of responsibility between organisations
- Oversight is already (short term) divided between several institutions, what about the medium term?
- Development of regulatory requirements for medium term crucial; preferably harmonised



# Summary

Thank you  
very much for  
your attention

- “Oversight” = “Watchful care” of the repository
- Level of oversight has a number of implications: For application of radiological protection system (cf. ICRP-122) and RK&M preservation
- Recently developed concept, conceptualisation for monitoring quite advanced, work ongoing
- Medium term: Era of oversight: To last (as long as possible), to start “soon”
- Oversight and memory keeping reinforce each other; oversight is a societal endeavour
- Some actual examples (DOE-LM sites, Centre de la Manche)
- Development of regulatory policy/requirements necessary for medium term