

# Putting it all together – CoolRep and integrated QA

Next Generation KMS Workshop  
3-4 December, 2009  
Tokyo

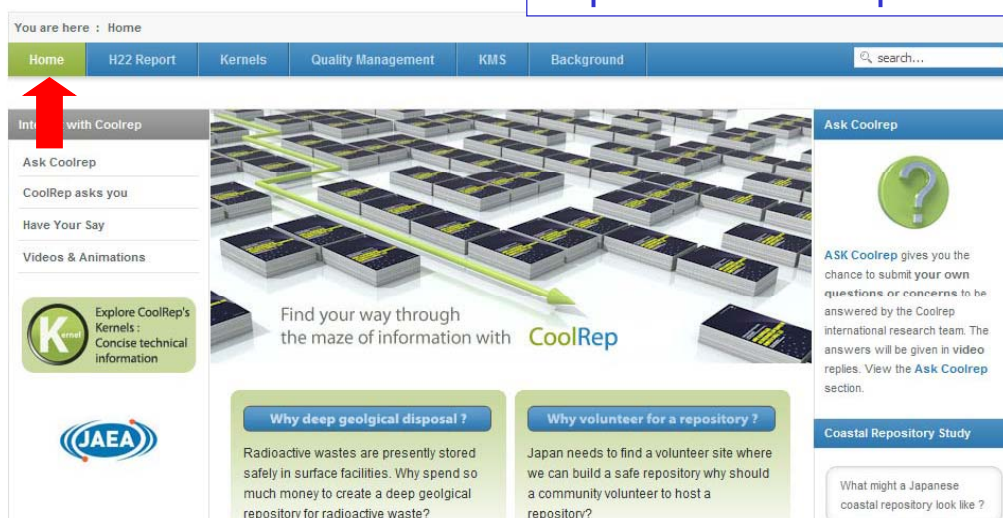
**Hiroyuki Umeki**

## CoolRep

- CoolRep developed as the interface to H22 – also providing easy access to all supporting documentation.
- CoolRep specifically designed to communicate with a wide range of stakeholders...

COOLREP | The next generation

<http://www.coolreph22.com/>



The screenshot shows the CoolRep website interface. At the top, there is a navigation bar with links: Home, H22 Report, Kernels, Quality Management, KMS, and Background. A search bar is located on the right. Below the navigation bar, there is a main content area. On the left, there is a sidebar with links: Ask Coolrep, CoolRep asks you, Have Your Say, and Videos & Animations. The main content area features a large image of a maze of information with a green arrow pointing through it, and the text "Find your way through the maze of information with CoolRep". Below this, there are two sections: "Why deep geological disposal?" and "Why volunteer for a repository?". The "Why deep geological disposal?" section includes the text: "Radioactive wastes are presently stored safely in surface facilities. Why spend so much money to create a deep geological repository for radioactive waste?". The "Why volunteer for a repository?" section includes the text: "Japan needs to find a volunteer site where we can build a safe repository why should a community volunteer to host a repository?". On the right, there is a section titled "Ask Coolrep" with a question mark icon and the text: "ASK Coolrep gives you the chance to submit your own questions or concerns to be answered by the Coolrep international research team. The answers will be given in video replies. View the Ask Coolrep section." Below this, there is a section titled "Coastal Repository Study" with the text: "What might a Japanese coastal repository look like?".

# Using CoolRep for access to the H22 supporting documentation...3 ways – through the H22 report

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You are here : Home > H22 Report > 1. Introduction

Home | **H22 Report** | Kernels | Quality Management | KMS | Background | search...

H22 Preface | **1. Introduction** | 2. Technical | 3. Demonstration of Safety | 4. Quantification of Safety | 5. Overview | Index

**H22 Review Submenu**

- 1.1 Overview
- 1.2 Scope & Goals

**Interact with Coolrep**

- Ask Coolrep
- CoolRep asks you
- Have Your Say
- Videos & Animations

CoolRep Link Ratings

CoolRep includes a QA assessment of safety

## H22 Chapter 1 - Introduction

In the past, management of radioactive waste was regarded as a purely technical activity. A number of different concepts were developed, with a consensus that deep geological disposal was the favoured option for more toxic types of waste - [link to NEA](#). In general, however, such projects have been characterised by a lack of progress – predominantly due to lack of public acceptance, if not active opposition. In order to improve this situation, the arguments supporting geological disposal have to be made in a clear manner and seen from the perspective of the benefits derived from the processes that produced the wastes in the first place. In Japan, the dominant sources of wastes requiring geological disposal is the generation of nuclear power.

### 1.1 Overview

Overview of "The Knowledge Base supporting safety cases for deep geological disposal" for JAEA Mid-term Report. Introduction Chapters.

### 1.2 Scope and goals of this report

This report represents a first overview of the tools and information needed to support safety cases for deep geological disposal and identifies R&D requirements to assure that such support is sufficient in the future to meet national programme milestones. As emphasised above, changed boundary conditions in the Japanese programme mean that a different approach to that in the past is

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# Using CoolRep for access to the H22 supporting documentation...3 ways – through the Kernels (Knowledge Element incorporating Requirements, Novelty, Experience and Limitations)

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You are here : Home > Kernels > CoolRep Kernels Overview > TRU Waste Kernel > 1. Introduction

Home | H22 Report | **Kernels** | Quality Management | KMS | Background | search...

CoolRep Kernels Overview

**CoolRep Kernels**

- TRU Waste Kernel
- Repository Design & Engineering Kernel
- An example Kernel

**Interact with Coolrep**

- Ask Coolrep
- CoolRep asks you
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- Videos & Animations

## 1. Introduction

- 1.1 Terminology and definitions
- 1.2 TRU-2 reference inventory, limitations, uncertainties
- 1.3 TRU in the context of the current Japanese NPP

## 2. Disposal options

## 3. Implementation constraints in Japan

## 4. Outline of the safety case

## 5. Priorities for future R&D

## 6. Summary

### 1. TRU Waste Executive Summary

Sunday, 15 November 2009 22:13

TRU for geological disposal currently corresponds to the waste from reprocessing or MOX fabrication containing concentrations of safety-relevant radionuclides that are too high to allow disposal in a near-surface or interim depth repository. Unlike vitrified HLW, this

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Using CoolRep for access to the H22 supporting documentation...3 ways – through argumentation representations

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You are here : Home > Background > Argumentation Networks

Home H22 Report Kernels Quality Management KMS Background search...

Waste Disposal Overview Why Volunteer ? JAEA Research & Development Argumentation Networks Comparison of Energy Sources

Interact with Coolrep

Ask Coolrep

CoolRep asks you

Have Your Say

Videos & Animations

**Argumentation Networks**

What are Argumentation Networks and what how can they be used ?

It's a technical term from knowledge engineering that provides a way of explaining the pros and cons of any issue. We can use Argumentation Networks (ANs) to highlight the basis of our safety case. They are useful for communicating complex issues.

An Argumentation Network - what's that?

An AN is a structured set of arguments and counter arguments, supported by evidence

ANs are an efficient way of explaining the pros and cons of any issue

The basic concept of argumentation has been used in philosophy for millennia

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Using CoolRep to communicate complex information to the public...the moles!

**Why volunteer for a repository ?**

We need to find a volunteer site where we can build a safe repository.

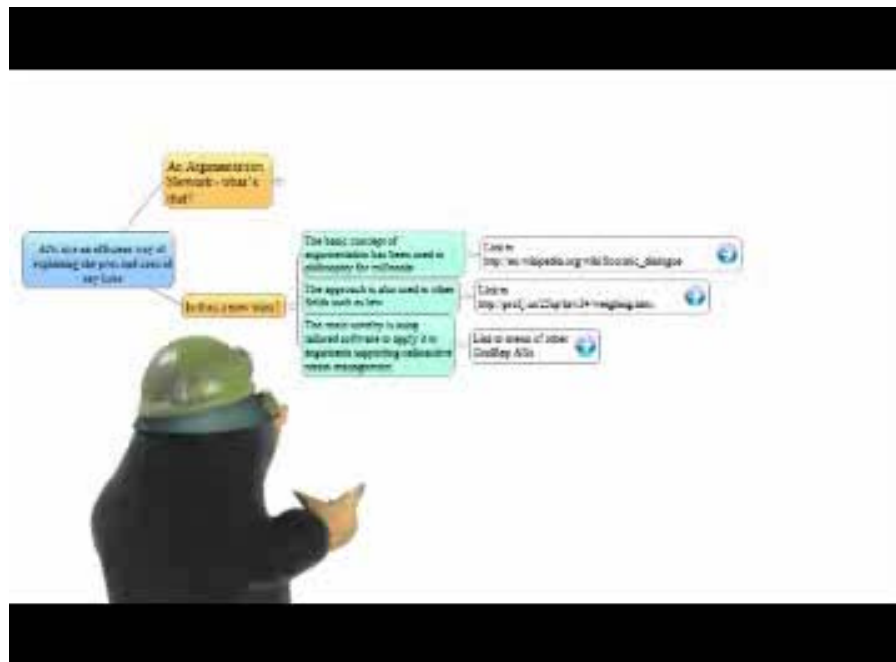
In Japan - and several other countries - it has been decided to search for volunteer communities that would be interested in hosting a geological repository. What are the issues and benefits involved with volunteering ?

**Volunteers**



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## Using CoolRep to communicate complex information to the public...the moles!



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## Using CoolRep to communicate complex information to the public...natural analogues

### A DEFINITION OF A NATURAL ANALOGUE

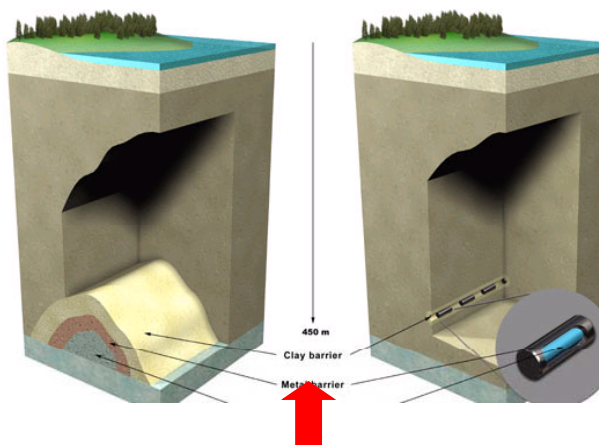
Analogues provide a method of testing our understanding of the long-term processes occurring in a repository.

### An example of a natural analogue : Cigar Lake, Canada - multiple barriers.

The 1.3 billion year old uranium ore deposit at Cigar Lake is one of the richest in the world. It is located around 430 metres below the surface.

Despite the high-grade uranium ore, there are no traces of its presence at the surface – the radionuclides present are effectively retained by a clay layer 10 to 50 metres thick.

The uranium ore is contained by several natural barriers, similar to the safety barriers in a deep geological repository.



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## Using CoolRep to establish dialogue ...earthquakes



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## CoolRep and QA

- QA – planned and systematic production processes providing confidence in the product and its suitability for its intended purpose.
- For radwaste disposal this is unique – testing a repository design compliance with design limits is difficult due to timescales, which leads to the use of natural analogues.
- JAEA R&D programme uses QA on many levels –
  - Site characterisation
  - Quality records for codes/databases
  - Test cases for verification exercises
  - Experimental and natural analogue cases for validation exercises.

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# Implementing QA – Review Introduction

**Coolrep Review Guidelines**

- Review Introduction**
- Screening Process
- Review guidelines
- Link Rating Guidelines
- Review Sheet
- Issue Resolution Form
- Schedule

**Interact with Coolrep**

- Ask Coolrep
- CoolRep asks you
- Have Your Say

## Review guidelines introduction

Wednesday, 01 April 2009 11:21

All documents submitted to CoolRep will be reviewed before publication on the web site. For documents that pass the initial screening process, the QA manager will establish a review schedule and arrange for appropriate review by one or more reviewers from the QA team. The allocation of reviewers to documents will be made on the basis of the technical areas addressed in the documents, the inter-relationships between different documents and the expertise of the reviewers.

Note that:

- Wherever possible quality is assured by direct linking to peer reviewed text, but the links will be reviewed and classified (see rating guidelines) as an essential part of the review process
- During production, a single read-only master exists containing the accepted updated draft; amendments of components may be produced in parallel, but contain digital signatures of the author and are added only after acceptance and digital signature by the QA manager (assures implementation of the QM system and prevents different versions of databases being used by different groups)
- Original text and review comments would be fully archived electronically and could, potentially, even be hyperlinked via a website. The QA section in the report can include, at least, links to main review comments and responses from authors.
- Automatic QA record generation
- Explicit QMS, change management
- QA record embedded in page

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# Implementing QA – screening process

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## Screening process

Wednesday, 01 April 2009 11:45

The screening process is carried out by the QA manager to minimise the workload of the reviewers and will follow these guidelines:

- level 1 screening: carried out by the first author of the report – is it good enough to submit in this format?
- level 2 screening: carried out by QA manager: who will evaluate whether it is of an appropriate standard for review. The aim of this initial evaluation is to determine whether review of the document would be constructive and of value to the authors. If the manager considers that review would be constructive, the document will be forwarded to the reviewer. If not, it will be returned to the authors with some guidance as to how it could be improved and a copy of the comments passed to the report coordinators.
- level 3 screening: either the QA manager accepts the document and signs it off or returns it to the reviewer for acceptance/rejection of the author's justification for ignoring the review comment. If the reviewer feels that the justification is unacceptable, the document is returned to the QA manager and an Issue Resolution Form (IRF) is assigned to the item and is returned to the author for re-assessment and re-submission. If a resolution cannot be found between the author and the reviewer, the QA manager will have the final decision.

Last Updated on Sunday, 05 April 2009 09:03

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# Implementing QA – review guidelines

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## Review guidelines

Wednesday, 01 April 2009 11:46

Formal review guidelines vary widely in the breadth and width of the information required of the reviewer (for example, see <http://mis696.wikiidot.com/paper-review-outline> and <http://www.princeton.edu/~rblee/ELE572F04/Outline%20of%20Paper%20Reviews.doc>), so it is important to lay out a relatively detailed system for CoolRep. Here, the reviewer must consider:

- Have the authors produced a clear and coherent summary of their work?
- Are the images/figures adequate/appropriate/informative enough for inclusion in CoolRep (if not, can you suggest improvements)?
- Are the links adequate/appropriate/informative enough to support the document and for inclusion in CoolRep (if not, can you suggest improvements)?
- Has the author established a sufficient understanding of the processes discussed for summarising/concluding the work in CoolRep?
- What are your impressions of the advances made as compared to the previous reports (H12 or TRU-II)? Are they clearly brought out? If not, how can this be improved?
- Is the level of integration acceptable, especially with showing cross links to elsewhere in CoolRep?
- Via the text and provided links, is it possible to follow the process from the acquisition of primary data, through analysis of the data to the resulting model?
- Do the produced and documented models satisfy current scientific standards (those of JAEA, NUMO, JNES and the general scientific community)?
- Are the conclusions of the studies reasonable and well sustained?
- Are there any unresolved conceptual issues? Are the assumptions made reasonable?
- Are remaining uncertainties properly treated? If not, why?

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# Implementing QA – link rating guidelines

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## Link rating guidelines

Wednesday, 01 April 2009 11:16

The unique character of the CoolRep process means that an additional layer of review is necessary. Normally, when reviewing a report, it is not necessary to review the references cited in a report, as well as the report itself. Here, however, the support of the link sites and documents is crucial to the arguments put forward in the CoolRep sections. As such, it is essential that any safety case relevant links are looked at again and weighted as in the table below:

Parameter	Yes	No
Is the primary data source from an organisation with a recognised QA procedure?	1	0
Is the primary data source from an organisation with QA procedure which is recognised by CoolRep?	2	0
Is the report published in a scientific journal with a peer review system?	1	0
Is the peer review system of the scientific journal recognised by CoolRep?	2	0
Is the report written in such a manner that the results can be fully recreated (i.e. is full sampling, analytical and interpretation/modelling information provided)?	1	0
Are the uncertainties (i.e. in sampling, analytical and interpretation/modelling) fully detailed?	1	0
Are the uncertainties quoted statistically robust?	1	0
Based on the data presented, are the conclusions justified?	1	0

Last Updated on Wednesday, 01 April 2009 11:34

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# Implementing QA – Review Sheet


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[QM System Login](#)

Interact with Coolrep

[Ask Coolrep](#)
[CoolRep asks you](#)
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[Videos & Animations](#)



QM System Login

[Back to overview page](#)


TRU Kernel version : 1.0 - Author : Fiona Neal

Date Added	Page and Paragraph	Content
22-11-2009	section 1.1, para 1	

Reviewer's Comments :

What is meant by the text associated with this link?

1. "Until 1970, solid low-level and transuranic waste at the Atomic Energy Commission's nuclear weapons facilities (shown here is Hanford Reservation, circa 1950s) was frequently disposed of in cardboard boxes. Once filled, this unlined trench would have been covered with dirt, leaving the cardboard to deteriorate ..."

2.

3. US Dept. of Energy

If I remember correctly, this is straight out of Ax and My's book (chapter 3) and so 3 things are required - first, the citation of the quotation, second the book citation and perhaps even, third, thanks to the USDoE for use. I'm not sure if point 2 covers point 3 (as the book thanked the USDoE - is this transferable to this link?). I suspect not - maybe ask Christina?

Authors Response :

	y / n	IRF
The photo & text are taken directly from a DoE web site. I have been using it for at least 5	<input checked="" type="radio"/>	

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# Implementing QA – Review Sheet

Issue resolution form

Wednesday, 01 Nov 2012 11:51



CoolRep	QA tracking ID:	Date of report submission:	Date review returned:	Issue resolution form (IRF) ID:	Decision of QA manager:
Review sheet	Unit hyperlink: Report title and version: Author: Reviewer:				

Issue Statement

Issue Title:

Issue Description:

Author's position:

Reviewer's evaluation:

QA manager's expectation:

Author's response:

QA manager's evaluation:

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# Implementing QA – JAEA QA Workshop

Of course, **CoolRep** is only a tool to facilitate QA: basic procedures, priorities and review work have to be carried out by expert teams - initial workshop record available via **CoolRep** or [http://www.jaea.go.jp/04/tisou/kms/pdf/qa\\_ws\\_19\\_2.pdf](http://www.jaea.go.jp/04/tisou/kms/pdf/qa_ws_19_2.pdf)



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## Conclusions and future work

- The existing version of **CoolRep** demonstrates key functionality: content is being reviewed and will be extended with publication of H22 in spring 2010 (with implemented QA)
- It is intended that **CoolRep** will be a living document, continually evolving after H22: critical input to provide guidance on future development will come from review of H22 by Japanese implementers, regulators and other stakeholders
- It is hoped that other organisations will adopt this approach and further development could be an area of collaboration - maybe coordinated by a users group