Organisation de Coopération et de Développement Economiques
Organisation for Economic Co-operation and Development

10-Apr-2007

English - Or. English

NUCLEAR ENERGY AGENCY
RADIOACTIVE WASTE MANAGEMENT COMMITTEE

NEA/RWM/IGSC(2007)4/PROV
Unclassified

# Integration Group for the Safety Case (IGSC)

**3RD AMIGO WORKSHOP ON**

**APPROACHES AND CHALLENGES FOR THE USE OF GEOLOGICAL INFORMATION IN THE SAFETY CASE**

**Preliminary Programme and Pre-registration**

**Nancy-France**
**15-18 April 2008**

**JT03225279**



English - Or. English



# 3rd AMIGO Workshop on
# APPROACHES AND CHALLENGES FOR THE USE OF GEOLOGICAL INFORMATION IN THE SAFETY CASE

**NANCY, FRANCE**

**15-18 APRIL 2008**

**A workshop organised by the OECD/NEA and hosted by Andra**

## PRELIMINARY PROGRAMME

## PRE-REGISTRATION AND CALL FOR PAPERS

Deadline: 15 May 2007

## FOCUS OF THE AMIGO-3 WORKSHOP

AMIGO-3 will conclude the AMIGO workshop series. The AMIGO Project—"Approaches and Methods for Integrating Geologic Information in the Safety Case"—is devoted to the exchange of information and in-depth discussions on the collection and integration of all types of geologic information (e.g. geophysical, hydrogeological, geochemical, structural) in repository siting and design, performance assessment models and the overall safety case for deep disposal of radioactive waste.

The first AMIGO workshop focussed on building confidence in analyses and arguments that support the safety case. The topics addressed at AMIGO-1 included the role of the geosphere in disposal concepts, the synthesis of geological information in conceptual models, and the types of safety case arguments which can be derived (or based upon) geologic information. The second AMIGO workshop expanded upon the AMIGO-1 deliberations to examine how geoscience arguments and evidence are assembled and linked to create a unified and consistent description of the geosphere (a "geosynthesis") in support of a safety case. It also examined the extrapolation and transfer of geoscience information in time and space, and some practicalities of collecting, linking, and communicating this information. As a logical continuation, the third workshop will address the integration of geological information in the overall safety case and will focus on complementary topics with regard to both the earlier workshops as well as on the outcomes of the AMIGO compendium initiative. As an additional but closely related topic, it will also consider the links to repository design.

Thus, the third AMIGO workshop will focus on the application and integration of geoscience arguments in the safety case and in design. It will address the qualitative and quantitative use of geoscientific information in these areas. Issues to consider include, for example, geoscience information to be transferred (including data usage, upscaling and simplification issues), justification of processes or effects to be considered or ignored in different scenarios, conservatism versus realism and treatment of uncertainty.

Of paramount interest are the links between geoscience, repository design and safety assessments, and the feedback between these activities, including the findings of safety case reviews. Several key aspects can be identified:

- Safety assessment: How does the availability of geologic data influence the development of safety assessment? How do recommendations for future research and site characterisation arise from safety assessment development or results?
- Repository design: What is the role of geologic information in repository design? Conversely, how do design criteria or requirements direct geological investigation and R&D programmes?
- Safety case reviews: How do reviews and evaluation of safety cases (by peer reviews, by regulators, by political decision makers) feed back to geologic investigation programmes?

The workshop will explore the feedback to and from the safety assessors and the geoscientists: how the safety case, fundamental geoscience R&D, development of effective engineered barriers and site characterisation studies are connected.

A main goal of AMIGO-3 is to give an indication of the extent and the methods by which geoscience arguments are (or will be) effectively addressed and documented in safety assessments and safety cases. Jointly with the AMIGO compendium, the results of the AMIGO workshops are aimed to provide guidance on how geological information can be collected, synthesised and applied to reach conclusions and to build confidence in safety cases for deep geological disposal.

## SCIENTIFIC PROGRAM COMMITTEE, CHAIRPERSONS AND RAPPORTEURS

The AMIGO-3 Scientific Programme Committee is responsible for the workshop organisation, and specifically responsible to define the general format of the workshop and conditions of participation, choose and describe the technical sessions and working groups to be convened, identify chairpersons and rapporteurs for plenary and working group sessions, prepare the instructions for the authors and review the proceedings.

Each session of the workshop and each working group will have a chairperson whose responsibilities are to introduce speakers and keep the session on schedule, steer discussion and questions to follow the objectives of the workshop, encourage and motivate interactions, and assist the rapporteur to prepare (1) an oral summary of discussions for the round-up plenary session and (2) a written contribution for the proceedings. The chairpersons will also review the workshop proceedings prior to publication.

The working group discussions will be supported by rapporteurs, whose responsibilities are (with assistance from the chairperson) to prepare and present an oral summary of the working group discussion at the round-up plenary session of the workshop. The rapporteurs also prepare written summaries of the working group discussions and conclusions for inclusion in the workshop proceedings.

## WORKSHOP STRUCTURE

The workshop will last three days, and will be organised into three plenary sessions plus several parallel working group sessions.

The first plenary session will comprise presentations by the workshop host, Andra, and the French technical support organisation, IRSN. The second plenary session will be devoted to presentations related to key topics addressed by the workshop. Working group sessions will be devoted to discussion of the topics listed in Annex A. Each Working Group will typically include a range of specialists with expertise in geosciences, engineering, and integration activities. These Groups have two main tasks: (1) for the topic under discussion, compile information and recommendations that are relevant and pragmatic, especially for possible use internationally in supporting a safety case; and (2) develop suggestions to guide studies to support future safety cases. Participants who wish may give 10-15 minute presentations pertinent to the topic to begin the first working group session, and should indicate their interest to the Secretariat. (If more than 2-3 participants are interested in giving presentations in each

working group, the Scientific Programme Committee may decide to organise a poster session.) Two special topical presentations will serve as breaks for the working group sessions.

The final round-up plenary session will synthesize the discussions and conclusions of working groups and of the workshop as a whole. Potential topics for subsequent work on geoscience in the context of geological disposal may also be discussed.

## PARTICIPATION

The AMIGO-3 Workshop is open to organisations of all NEA Member Countries active in the field of nuclear waste management. The aim of AMIGO is to share the experiences of geoscientists and safety assessors and so each participating organisation may nominate two representatives (one in each domain).

Participation in the AMIGO-3 Workshop will be limited to approximately 50 persons. Limiting the official representation is necessary to ensure a workable size for the Workshop and allow sufficient leeway to the Scientific Programme Committee to invite specific experts and other speakers. All attendees are expected to take active part in the discussions at the Workshop.

Most experts and speakers will likely represent IGSC member organisations, although the inclusion of the academic community is encouraged.

## MEETING LOGISTICS

The meeting will take place at the École des Mines in Nancy, France.

English will be the working language of the Workshop and the proceedings. Oral presentations during the plenary sessions may make use of an overhead projector or a portable computer projector (for presentations using PowerPoint or Acrobat). Computer projectors will also be available in the working group meeting rooms. An electronic version of all oral presentations will be required to be submitted in advance of the workshop.

## CALL FOR ABSTRACTS, INSTRUCTIONS FOR AUTHORS AND REPORTS

The plenary sessions will consist of invited presentations addressing the main workshop topics.

In addition, workshop participants are encouraged to present experiences from their national programmes related to the focus of AMIGO-3. The Scientific Programme Committee will, based on the submitted abstracts, decide whether the presentations will be used to stimulate the discussions in the Working Groups (authors should indicate their preferences concerning the choice of Working Group topics) or to contribute to a poster session.

Authors should forward their **abstracts no later than 30 November 2007** (along with final registration). Please provide an abstract of one page maximum describing the topic to be presented, along with an indication of whether the presentation should be considered for a working groups or a poster session as first preference. A paper (6-12 pages) supporting all presentations will be required to be provided before the Workshop.

The workshop proceedings will be published by the NEA and will summarise the presentations, discussion, and lessons learnt at the workshop—including the working group sessions—as well as providing full technical papers. The Scientific Programme Committee and members of the AMIGO Steering Group will review the proceedings before publication. A copy of the proceedings is included in the workshop fee and will be distributed to all Workshop participants. Further details and formatting instructions for papers will be provided with the final programme.

## LOCAL ARRANGEMENTS

Local arrangements for the Workshop are being coordinated by Andra. The workshop will include a Workshop Dinner to be held 15 April 2008 and an optional technical tour of the Meuse/Haute Marne URL on 18 April 2008.

Lunches, as well as coffee breaks during each morning and afternoon, will be provided. Questions regarding local arrangements should be directed to Patrick Lebon at patrick.lebon@andra.fr or +33 (0)1 46 11 80 82.

### Accommodation

Participants will be responsible for making their own hotel reservations. For the convenience of participants, Andra will block in advance a number of rooms at a selected hotel, for which the price and room availability will be guaranteed during the reservation period. Additional information will be provided as soon as possible.

### Transportation

Transportation between hotels and École des Mines will be made by public bus. A Pass ticket will be provided to each participant.

Transportation by bus will be provided for the technical tour of the Meuse/Haute Marne URL on 18 April 2008. On return to Nancy (18:00) arrangements will be made for drop-off downtown (railway station).

## REGISTRATION AND PARTICIPATION

Participants should return the pre-registration form to NEA by **15 May 2007**, indicating their intention to attend the workshop. Indications should also be given for participation in the workshop dinner (15 April) and the optional technical tour of the URL on 18 April 2008.

A final workshop programme and official registration form will be provided in fall 2007. The deadline for final registration and payment of all fees is **30 November 2007.**

A registration fee will be charged to cover the cost for meeting logistics, refreshments, and development and printing of proceedings. All registered workshop participants will receive a printed copy of the proceedings. The registration fee is expected to be approximately 400 euro; payment details will be provided with the final programme and registration form.

**SECRETARIAT AND CONTACTS**

The NEA is responsible for the scientific secretariat of the workshop. All technical questions in relation to the workshop should be addressed to the NEA Secretariat:

Betsy Forinash
OECD/Nuclear Energy Agency
12, Boulevards des Îles
F-92130 Issy-les-Moulineaux

Tel: +33 (0)1 45 24 10 49
Fax: +33 (0)1 45 24 11 45
Eml: Elizabeth.FORINASH@oecd.org

The representative from the host organisation is:

Patrick Lebon
Andra
Direction Scientifique
Parc de la croix blanche
1-7 rue Jean Monnet
F-92298 Chatenay-Malabry Cedex

tel : +33 (0)1 46 11 80 82 (sec : +33 (0)1 46 11 80 47)
Fax: +33 (0)1 46 11 84 10
Eml: patrick.lebon@andra.fr

**PRELIMINARY AGENDA**

**DAY 1 - 15 April 2008**

**08:30 - 09:00** **Welcome Addresses**
*Andra, NEA, Ecole des Mines*

**Introduction: Scope and Objectives of the Workshop**
*Chairman of the Programme Committee*

**09:00 - 10:30** **PLENARY SESSION I: HOST ORGANISATION PRESENTATIONS**
*Each presentation is to be 20 minutes with 10 minutes for questions and discussions.*

***1A. Lessons learnt from Dossier 2005***

Overview of the disposal feasibility assessment in Meuse/Haute-Marne
*From the preliminary geoscientific survey to the Safety Case* (Andra)

Integration of the geoscientific data in the Safety Case
*Methodology and organization, justification of the processes and models, choice of the data* (Andra)

Dossier 2005 evaluation by the French technical support organisation
*Use of Geological Information in the analysis: data from other sites, alternative interpretation or modelling* (IRSN)

**10:30 - 10:50** Break and poster session

**10:50 - 11:50** ***1B. French programme perspectives***

From the feasibility assessment to the licensing application: Organisation of the Safety Case
*Interactive development of engineering/PA/knowledge management, key issues addressed to Geosciences* (Andra)

From the feasibility assessment to the licensing application: Organisation of the data acquisition and connection to new safety rules
*How to deal with metrological limits, uncertainties and project milestones; implications for new safety rules in terms of the safety case* (Andra)

**11:50 - 13:00** Lunch and poster session

**13:00** **PLENARY SESSION II: KEY TOPICS PRESENTATIONS**
*Presentations are intended to address the key topics of the workshop.*
Presentations are one hour, *including* 5 to 10 minutes for discussion.

**13:00 – 14:00** Application of geoscience data and host rock classification for site selection, repository layout, and the safety case
*J-O. Selroos, A. Hedin, R. Munier* (SKB)*; L. Wikström* (Posiva)*; J. Andersson* (JA Streamflow AB)*; P. Hellä* (Pöyry Environment Oy)*; A. Ikonen* (Saanio & Riekkola Oy)

**14:00-15:00** The regulatory perspective: Role of regulatory review of the safety case and feedback to site investigation, site selection, and geoscience programmes (HSK, Switzerland)

**15:00-15:30** Break and poster session

**15:30-16:30** Japan: Case study of a staged site investigation and the role of underground research laboratories (URLs) (JAEA, Japan)

**16:30-17:30** Collection and Integration of Geoscience Information to Revise the WIPP Hydrology Conceptual Model (US-DOE, USA)

**19:00 - 22:00** **Workshop Dinner**

End of Day 1

**DAY 2 - 16 April 2008**

**08:45- 09:30** **Topical paper on Geosynthesis compendium: synthesis of questionnaire answers**
*OPG/AMIGO Chairman*

**09:30 - 09:45** **Introduction to the Working Groups** *[Format, agenda, topics, objectives, room locations, introduce chairpersons etc.]*

Workshop participants will be divided into several Working Groups to discuss topics related to central themes of the workshop and the integration and application of geoscience in the safety case (see Annex A). Each working group will address all topics (and associated questions) in turn; a rapporteur will rotate with a given topic to spend several hours in discussions with each group, reflecting and building on the input from preceding discussions on a single topic. The chairperson will facilitate the discussion in the Working Group. The rapporteurs will summarise the discussions around the topics assigned to them, and these conclusions will be presented in the final plenary session of the Workshop.

This format is intended to achieve broad-based input to all questions, leading to well-synthesized findings, as later groups will have the benefit of preceding discussions and thus can choose to focus on areas on which clear consensus has emerged or, alternatively, to explore in more depth the issues that may be difficult to define or resolve. This approach takes account that a central goal of the workshop is to "bridge the gap" and improve links and communication between geoscientists and safety assessors; this integrated approach to the working group discussions aims to avoid the unconscious divisions that might otherwise appear if participants are asked to choose a single working group topic as a priority.

**Short (10 to 15 minutes) presentations pertinent to a working group topic may be allowed to motivate the discussion during a working group session. Interest in giving a working group presentation should be indicated on the Pre-Registration Form given in Annex B.**

**09:45 - 10:00** Break and poster session

**10:00 - 12:15** **Parallel Working Group Sessions**

**12:15-13:30** Lunch

**13:30-14:15** **Integrating Components of the Earth System to Model Global Climate Changes**
*Jean-Claude Duplessy*

**14:15 - 15:30** **Poster Session** and Coffee Break

**15:30 - 17:30** **Parallel Working Group Sessions** (continued)

End of Day 2

**DAY 3 - 17 April 2008**

| | |
|---|---|
| **08:30 - 10:30** | **Parallel Working Group Sessions** |
| **10:30 – 11:00** | Break |
| **11:00 – 16:00** | **PLENARY SESSION III: WORKING GROUP AND WORKSHOP SUMMARIES** |
| **11:00 – 12:30** | **Conclusions and related issues of Working Group discussions (20 minutes each topic+discussion)**<br>*by rapporteur of each working group* |
| **12:30 – 14:00** | Lunch |
| **14:00 – 14:15** | Presentation on optional field trip to URL |
| **14:15-16:00** | **Final session: Synthesis and Future Work**<br>***Synthesis of the workshop***<br>(15 minutes of observations from Professor Jean-Claude Duplessy, 30 minutes for short comments from S. Voinis (Chair, AMIGO-3 Technical Programme Committee and K. Rohlig (Chair, AMIGO Steering Committee) and for a general discussion)<br>***Conclusion of AMIGO***<br>(1 hour; final discussion on recommendations for further actions) |
| **16:00** | **Closing of the Workshop** |

Annex A:

## Topics for Working Group Discussion

Several topics are identified for discussion by the working groups. Please refer to the main programme for a description of the working group format and process:

The AMIGO-3 workshop aims to explore "Approaches and Challenges for the Use of Geological Information in the Safety Case." Of interest are the application of geoscience arguments (both qualitative and quantitative) in the safety case, links to the safety assessment, design and feedback to and from safety assessors and geoscientists. A main result from AMIGO-3 should be an indication of whether geoscience arguments are (or are expected to be) effectively addressed in safety cases. This implies an emphasis on "bridging the gap" and building communication between geoscientists and safety assessors.

Overarching questions include, for example:

- Has geoscientific information been effectively integrated and addressed in safety cases?
  - Issues to consider include the connections between the safety case and fundament geoscience R&D; information to be transferred into safety cases (including aspects of data usage, upscaling, and simplification issues), justification of the processes or effects to be considered or ignored in different scenarios, conservatism versus realism, and quantification (or other treatment) of all sources of uncertainty.

- To what extent (and how) does geoscientific data influence the development of the safety concept, the repository design, and the safety case?
  - How does the safety assessment take account of geoscience information?
  - How is such information integrated in site selection processes?
  - How is it taken into account in repository design?

- To what extent (and how) does the development of the safety case influence R&D priorities and site investigation or other geoscience activities?
  - How does information from safety assessment or safety cases feed back to geoscience programmes?
  - What is the influence of regulatory and peer reviews of safety cases in terms of such priorities?

Based on these overarching questions, several key topics are identified for discussion in working groups. The discussions should consider these issues in the context of the goals of the overall AMIGO-3 workshop and in terms of the key aspects of integration identified above.

**Topic 1: What are the processes by which information from site characterisation is selected and applied in safety assessment (i.e. scenario development and modelling)?**

- Identification of most relevant processes
- Simplification and abstraction
- Probability of events
- Propagation of uncertainties
- Traceability

**Topic 2: How are the uncertainties in geological data and scaling issues dealt with in repository design and the safety case? (i.e. modelling)**

- Probabilistic versus deterministic
- Stochastic data
- Transferability from URL to repository scale: temporal and spatial scaling
- Modelling methodologies
- Design choices to mitigate uncertainties

**Topic 3: How does (and to what extent) the development of the repository design and the safety case influence site characterisation and R&D priorities? (Information flow back from the safety case)**

- Emerging technologies
- Confirmation of required rock or site characteristics (at various scales)
- Reduction of uncertainties by further investigation (and "when to move underground"

Annex B

**3rd AMIGO Workshop** on

**"**Approaches and Challenges for the Use of Geological Information in the Safety Case**"**
15-18 April 2008, Nancy, France

**PRE-REGISTRATION FORM (**PLEASE FILL IN USING BLOCK CAPITALS)

**Yes,** I am interested in the AMIGO-3 Workshop and I hope to attend. Please keep me informed as practical information and the final programme are made available.

| | | |
|---|---|---|
| Family and Given Name: | | |
| Organisation: | | |
| Address: | | |
| Phone: | | Fax: |
| E-mail: | | |

I also would be interested to participate in: (please circle the appropriate response)

- The workshop dinner on the evening of Tuesday, 15 April *Yes* *No*
- The technical field trip on Friday, 18 April *Yes* *No*

*(further details will be provided on the events with the final programme)*

I propose the following paper for presentation at AMIGO-3 as a(n):

☐ oral presentation for working group ☐ poster presentation

*An abstract is due no later than 30 November 2007; authors will be notified of decisions in January 2008.*

| | |
|---|---|
| Author(s): | |
| Affiliation(s): | |
| Title: | |

**This form must be returned to Mrs. Katia-Karina Le Bot**
**e-mail: katia-karina.lebot@oecd.org, telephone: +33 (0)1 45 24 10 87**