

## MOBILITY MISSION REPORT

*This work has been partially supported by the EURAD project that has received funding from H2020-EURATOM 1.2 under grant agreement ID 847593.*

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### **REPORT TEMPLATE GUIDELINES — REMOVE THIS ENTIRE SECTION BEFORE SUBMITTING**

- *This template consists of “sections” (fixed headings) and “fields” (text boxes for custom information)*
- *All sections and fields are mandatory unless specified otherwise*
- *Appendix “A. Mission journal” should be prepared during the course of the mission*
- *All template guidelines shall be replaced with custom text or removed as specified*
- *The report shall be approved by the official mission mentors or supervisors before submission (use the signature block at the very end of the report template)*
- *The report shall be submitted in both editable (.doc) and portable (.pdf) file formats*
- *Both files shall use the code of the mission as the filename’s suffix, i.e. “Mission\_Report\_SXXXXX”: the word “Template” shall be replaced with the initial code assigned automatically to the application (letter “S” followed by 5 digits)*
- *The report shall be submitted via email to [euradwp13@sckcen.be](mailto:euradwp13@sckcen.be)*

### MISSION TITLE

2nd GAS/HITEC Joint training course – Liège (Belgium)

### DESCRIPTION

#### Concerned organisations

Research entities :CNRS (Univ Grenoble)

#### Concerned infrastructures or facilities

- Underground research laboratory

## Concerned phases

- Phase 3: Facility construction
- Phase 5: Post-closure

## Themes and topics

- Theme 3: Engineered barrier system (EBS) properties, function and long-term performance
  - Clay-based backfills, plugs and seals
  - Cementitious-based backfills, plugs and seals
- Theme 4: Geoscience to understand rock properties, radionuclide transport and long-term geological evolution
  - Long-term stability (uplift, erosion and tectonics)
  - Perturbations (gas, temperature and chemistry)
  - Aqueous pathways and radionuclide migration

## Keywords

Training ; thermo-hydro-mechanical coupled processes ; thermal effects and gas transfer ; behaviour of geomaterials

## EXECUTIVE SUMMARY

The aim of this mission was to give a course on the state of the art in multiscale and multiphysics modelling of clay materials, incorporating the work carried out during the Eurad programme, for the 2<sup>nd</sup> GAS/HITEC joint training course.

## 1. MISSION BACKGROUND

### 1.1. R&D background

multiscale and multiphysics modelling of clay materials

### 1.2. Mission objectives

to give a course on the state of the art in multiscale and multiphysics modelling of clay materials

### 1.3. Mission request

to give a course on the state of the art in multiscale and multiphysics modelling of clay materials

### 1.4. Mission composition

#### Host organisation

University of Liège, Belgium.

#### Host facility

University of Liège, Belgium.

#### Mission dates

August 30-31, 2023

## 2. MAJOR PRACTICES, TECHNIQUES, METHODS, TOOLS OR SYSTEMS OPERATED OR STUDIED

### 2.1. Practice, technique, method, tool or system operated or studied during the mission

#### Description

to give a course on the state of the art in multiscale and multiphysics modelling of clay materials

#### Usage

to give a course on the state of the art in multiscale and multiphysics modelling of clay materials

#### Benefits

Those who attended the course were able to deepen their knowledge of multi-scale and multiphysics modelling of clayey rocks

#### Limitations

no

#### Applicability

I presented what we do in our home context.

### 2.2. Practice, technique, method, tool or system operated or studied during the mission

#### Description

#### Usage

#### Benefits

**Limitations**

**Applicability**

2.3. Practice, technique, method, tool or system operated or studied during the mission

**Description**

**Usage**

**Benefits**

**Limitations**

**Applicability**

2.4. Practice, technique, method, tool or system operated or studied during the mission

**Description**

**Usage**

**Benefits**

**Limitations**

**Applicability**

### 3. MISSION FINDINGS AND CONCLUSIONS

#### 3.1. Lessons learned and conclusions

I gave a course on the state of the art in multiscale and multiphysics modelling of clay materials

#### 3.2. Relevant findings and conclusions for home organisation

No findings

#### 3.3. Relevant findings and conclusions for host organisation

Lecture on multiscale and multiphysics modelling of clay materials.

#### 3.4. Relevant findings and conclusions for other organisations

multiscale and multiphysics modelling of clay materials

## 4. POTENTIALS FOR IMPROVEMENT OR DEVELOPMENT

- 4.1. Generic potentials
- 4.2. Potentials for home organisation
- 4.3. Potentials for host organisation



## APPENDICES

### Mission journal

I travelled between Grenoble and Liège on Tuesday 29 August.

I gave my course on the morning of Wednesday 30 August.

I returned to Grenoble on Wednesday 30 August.

### Mission bibliography

## MISSION BENEFICIARY

Pierre BESUELLE  
Senior Researcher  
Laboratoire 3SR  
CNRS, France

## PARTNER EXPERTS CONTRIBUTING TO THE MISSION

### Host organisation experts

- Frédéric COLLIN




### Home organisation experts

- Nicolas ZALAMEA

### Other organisations experts

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## REPORT APPROVAL

Date	Beneficiary	Home mentor/supervisor	Host mentor/supervisor
September 15, 2023	Bésuelle	Peyroux	Name Collin
	 Visa	 Visa	 Visa