



# Mont Terri Project

## Underground Rock Laboratory

ANDRA BGR CHEVRON CRIEPI DOE ENRESA ENSI FANC GRS HELMHOLTZ IRSN JAEA NAGRA NWMO OBAYASHI RWM SCK•CEN SWISSTOPO TOTAL

## Mont Terri Rock Laboratory

Field report: December 3–9, 2018 (Phase 24)

### Distribution

#### Authorities

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#### Delegates of the Project Partners

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#### Principal Investigators and Experiment Delegates of Phase 24 experiments

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#### Supporting Research Organisations

Paul Scherrer Institute PSI: S. Churakov, M. Glaus, Th. Gimmi, L. van Loon  
ETHZ: S. Löw, M. Ziegler, S. Wiemer, A. Zappone  
EPFL: L. Laloui, R. Bernier-Latmani, M. Violay, B. Lecampion

#### Project Management

Swisstopo: C. Nussbaum (Project Manager), T. Theurillat (Site Manager), S. Schefer (Deputy Site Manager), D. Jaeggi (Research Associate)  
GGT: F. Burrus (Project Engineer), Th. Küttel, R. Daneluzzi

## **Construction of Gallery 18**

- The excavation continued along Gallery18 and reached GM\_146.0 by Friday, November 30. The swisstopo team composed of D. Jaeggi, R. Raselli, M. Ringeisen, N. Dietler and the guest Chaocheng Dai performed the daily geological mapping.

## **CS-D (CO<sub>2</sub>: Studying Caprock and Fault Sealing Integrity) experiment**

- From December 3 to December 5, M. Grab, S. Demir, A. Obermann, M. Lukovic and A. Rinaldi (ETHZ) installed the passive seismic system in boreholes BCS-D5, BCS-D6 and in the niche 8.
- On Friday, December 7, M. Grab performed a test run on the passive seismic system and conducted the baseline measurements on the active seismic system.

## **FE-M (Long-Term Monitoring of the Full-Scale Emplacement Experiment) experiment**

- On Wednesday, December 5, B. Firat-Lüthi (Nagra) conducted the thermal conductivity measurements with the KD2 device (**Figure 1**). Further, she measured the dielectric resistivity of the water in the borehole BFE-B49 using a PR2-probe. The PR2-data will be used to calculate the borehole water contents.

## **FS-B (Imaging the Long Term Loss of Faulted Host Rock Integrity) experiment**

- On Monday and Tuesday, M. Robertson (LBNL) prepared further fiber optical installations for boreholes BFS-B3 and BFS-B4.
- From Monday to Friday the drilling company GeoSonic continued drilling borehole BFS-B3. They reached a depth of 75 m by Friday. By contrast to BFS-B5 drilled in the hanging wall, BFS-B3 is being drilled in the footwall of the Main Fault, parallel to it at a distance of 5 m. The drilling of BFS-B3 is expected to be finished on Monday afternoon.

## **MA-A (Modular Platform for Microbial Studies) experiment**

- On Monday, December 3, N. Burzan (EPFL) performed the calibration of the HS-probe.

## **TS (Testing Different Tunneling Support in Sandy Facies during Extension of Ga18) experiment**

- On Thursday, December 6, A. Vlasek and M. Regli (Marmota Engineering) performed further measurements using the fiber optical strain sensors in the floor of the 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>th</sup> TS section in Gallery18.

## **Varia**

- On Tuesday, December 4, the annual Saint Barbara celebration was held inside the tunnel (**Figure 2–5**). Every year on December 4<sup>th</sup> people commemorate the Saint Barbara, protector of miners, geologists, armourers, artillerymen and military engineers. As a part of this celebration a sermon was hold by Father P. Rebetez followed by an aperitif. The tunneling company, partners and contractors present in the rock lab participated to the celebration.

## Visits

Day	Date	Number of persons	Name of the group	Guide
Mon	03.12.2018	16	Schüler Gymnasium Thun	H.-P. Weber
Tue	04.12.2018	50	Fête Sainte-Barbe	P. Bossart
Wed	05.12.2018	21	Energierreise Deutschland	P. Bossart
Wed	05.12.2018	38	Höherer Unteroffiziers Tag	G. Fiedler/ H. Hauser
Fri	07.12.2018	66	ATB SA	M. Pretalli/ G. Fiedler/ S. Schefer/ F. Burrus/ T. Küttel

C. Nussbaum, D. Jaeggi, S. Schefer and R. Raselli, December 7, 2018



**Figure 1: FE-M experiment:** B. Firat-Lüthi (Nagra) working on the PR2 and KD2 measurements (Photo: R. Raselli, swisstopo).



**Figure 2: Varia:** Saint Barbara in front of the musicians. To her feet the tower in which she had been imprisoned based on the legend is also visible (Photo: S. Schefer, swisstopo).



**Figure 3: Varia:** P. Bossart (swisstopo) was one of many to hold a speech in honor of the Saint Barbara festivities (Photo: S. Schefer, swisstopo).



Figure 4: Varia: Father P. Rebetez preparing the Eucharist (Photo: S. Schefer, swisstopo).



Figure 5: Varia: As a part of the ceremony an “Alphorn” concert took place in the Gallery 18. Alphorn is an ancient Swiss instrument. It is famous for its deep sound, hearable throughout Alpine valleys. Its sound was also nice in underground. (Photo: S. Schefer, swisstopo).