



# 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: October 15 – October 21 2018 (Phase 24)

### Distribution

#### Authorities

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#### Delegates of the Project Partners

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Obayashi: M. Fukaya  
RWM: S. Thompson  
SCK•CEN: C. Bruggeman  
Swisstopo: A. Möri  
TOTAL: A. Brisset

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

ANDRA (E. Huret, G. Armand, A. Albrecht, J. Delay, Y. Linard, S. Necib, A. Vinsot, P. Henocq), BGR (K. Schuster, J. Massmann, S. Costabel, W. Graesle, C. Ostertag-Henning, H. Shao, A. Schippers, J. Hesser, T. Kneuker, G. Ziefle, D. Rebscher), CHEVRON (R. Ewy, H. Goodman), CRIEPI (T. Oyama, S. Yokoyama), DOE (P. Nair, J. Birkholzer, J. Rutqvist, Y. Guglielmi), ENRESA (J.C. Mayor), ENSI (M. Herfort, B. Graupner, J. Hansmann, E. Saraiva, M. Sentis), FANC (F. Bernier, P. De Cannière, B. Guiot, G. Pochet, M. Surkova), GRS (K. Wieczorek, O. Czaikowski), Helmholtz (M. Kuehn, S. Lueth, A. Cherkouk, A. Vieth), IRSN (J.-M. Matray, C. Wittebroodt, P. Dick), JAEA (K. Tanai, K. Aoki), NAGRA (O. Leupin, J. Becker, N. Diomidis, F. Kober, D. Traber, B. Garitte, V. Cloet, L. Cantieni, S. Giger, N. Giroud, G. Deplazes, S. Koehler, A. Reinicke), NWMO (L. Kennell-Morrison, S. Briggs, H. Kasani, K. Birch, J. Binns, P. Keech, T. Yang), OBAYASHI (M. Fukaya, Y. Kimura), RWM (S. Thompson, S. Norris, R. McLaverty, R. Hibberd, M. Bailey, J. Pearson, M. Cowley, H. Paireudeau), SCK•CEN (C. Bruggeman, D. Jacques, M. De Craen, N. Bleyen, N. Maes), Swisstopo (A. Moeri, P. Bossart, C. Nussbaum, D. Jaeggi, C. Minnig, S. Schefer), TOTAL (A. Brisset)

#### 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\_98.65 by Friday, October 19. On Wednesday, October 17, the section TS-1 was concluded, and on Thursday the TS-2-section started. The TS-2-section demands an excavation speed of 1 m/day.

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

- On Monday, the drilling company GeoSonic finished the drilling of borehole BCS-D2. On Wednesday they moved the rig to BCS-D4 where it was oriented by I. Paupe (GGT). The drilling of the concrete took until Friday morning! By Friday afternoon BCS-D4 was down to 19.20 m.
- On Tuesday and Wednesday, J. Gisiger, A. Jakupi and L. Schwab (Solexperts) installed the packer system into BCS-D2.
- Monday and Tuesday, M. Lukovic and Q. Wenning (ETHZ) continued the logging and scanning of drill cores from borehole BCS-D2. They were joined by A. Zappone (ETHZ) on Tuesday for the installation of the packer system. Wednesday to Friday M. Lukovic (ETHZ) was on site to overview the drilling process.

## **MB-A (MineByTest 2018 Hydromechanical Characterization of the Sandy Facies) experiment**

- On Tuesday and Wednesday, October 16-17, D. Novotny and C. Fixar came to pick up equipment from the drilling campaign. They also adjusted sensors in order to remotely measure the development of the rock.

## **SI-A (Seismic Imaging Ahead of and Around Underground Infrastructure) experiment**

- Monday and Tuesday, the drilling company GeoSonic continued the drilling of boreholes BSI-A-R9 to BSI-A-R16. The remaining boreholes will be drilled once the drilling rig is moved to Ga08.

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

- On Monday evening, October 15, F. Fischli, A. Vlasek and H. Zimmermann (Marmota Engineering AG) installed the first profile of fibre-optics in TS-1, GM\_92.5 (**Figure 2**). They were assisted by S. Schefer (swisstopo). These optical 3D monitoring sections will measure deformation in the shotcrete.
- TS-1 was concluded on Wednesday. TS-2 started on Thursday with the first bullflex supporting the steel liners successfully installed Thursday night (**Figure 3**). The work was supervised by the project engineer F. Burrus (GGT).
- On Wednesday and Friday, October 17&19, F. Fischli and A. Vlasek (Marmota Engineering AG) performed the first two measurements on this sections. The measurements were done during the time of the mapping.

## **Varia:**

- Safety: On Thursday, October 18, T. Theurillat and S. Schefer (swisstopo) followed of formation for the Polycom radios at the Police Cantonal du Jura in Delémont. The Polycom radios allow a close collaboration with emergency services also in the tunnel.

## Visits

Day	Date	Name of the Group	Visitors	Guides
Wed	17.10.2018	IHV (Association of Industry and Commerce) Thal-Gäu-Bipperramt	10	P. Burgert G. Fiedler
Fri	19.10.2018	Work and further Education Centre Lyss – ZIM 2014a	24	G. Fiedler
Fri	19.10.2018	Brandolin and Zanolli	5	H. Hauser
Fri	19.10.2018	Siblings Lerch	15	G. Fiedler
Sat	20.10.2018	Tonneteam	15	M. Pretalli

C. Nussbaum, D. Jaeggi and S. Schefer, October 19, 2018



**Figure 1: CS-D experiment:** The team from Solexperts installing the packer system into BCS-D2  
(Photo: S. Schefer, swisstopo)



**Figure 2: TS experiment:** H. Zimmermann and A. Vlasek installing the first profile of fibre-optics in TS-1 (Photo: F. Fischli, Marmota Engineering AG).



**Figure 3: TS experiment:** First bullflex installed in section TS-2 (Photo: F. Burrus, GGT).