

The Mining Trip: an Unforgettable Experience of *in situ* Teaching

✉ Dr Fanny Descamps



How can you graduate as a mining engineer if you have never once been to a mine? For some time now, the Mining Engineering Unit has organised a trip abroad in order to visit diversified mining operations and to apply the theoretical knowledge learnt through mining courses in the field (geology, rock mechanics, mining techniques, mineral processing, etc.). From the mid- to late nineties, the students, led by Prof. Tshibangu, travelled to France. There they visited several mines (uranium, barite, gold, collieries in Lorraine), as well as oil production facilities in Champagne, the underground laboratory for radioactive waste disposal (ANDRA), and the French Institute for Petroleum (Paris). With the progressive closure of mining sites in France, the mining trip was then organised in Spain, where there are facilities for sepiolite production, open cast and underground coal mines, Zn-Cu-Pb mines, etc. At that time, being able to go on such a trip really seemed like an amazing dream for the students. I was one of those.

The year 2002 represents an important milestone in the organisation of this activity. Indeed, with the desire to broaden the students' view on the mining industry, new horizons were sought. Is there a place in the world where you can visit large mining operations for commodities like diamonds, chromium, platinum, gold, and even coal, in only 10 days? Yes, if you travel to South Africa, because of its extraordinary geology. The idea was challenging: we had to find contacts in the mining industry, among those big international companies (Anglo American, De Beers, ...), organise the journey to Johannesburg and between mining sites, plus find appropriate accommodation... all for an affordable price. With a lot of personal investment and the help of sponsors (including the University and the engineer's association), we did it. After

fifteen years, the mining engineering students still sign up for the mining trip to South Africa.

To give an example, let me take you on unforgettable experience: a gold mine visit, at depths exceeding 3,600 m. The Kloof mine lies in the Witwatersrand Basin. The mined layer is a 1-2m thick quartz conglomerate with a 22-25° dip. Gold is encased in the conglomerate cement with a mean grade of 5g per ton of rock. We have visited this mine several times with different groups of students. The working conditions can be very severe because of the mine's depth. There the miners have to work in 30°C temperatures (after cooling the air) with an 85-90% relative humidity. A first shaft takes you to 700 m in depth then a secondary shaft goes to the level we visited. The extension of the mine is such that a train transports people from the shaft to the working areas. In these thin layers, hand-held equipment is still common and high stresses are a major challenge to deal with.

Besides the wide variety of commodities and techniques, and the size of mining sites, this immersion in an English-speaking country is great for improving the students' technical vocabulary. This skill is evaluated by means of a now famous test, referred to as "mining TOEIC". As a personal project, each student has to prepare a short presentation before the trip on one particular mine or commodity, based on the available literature and mining databases. Once back in Belgium, they also have to write

a more detailed individual report on a specific case developed during the visits. The contact with the industry also develops soft skills, such as human relationships, and team building, safety and environmental concerns. Some students even take the opportunity to gather contacts for their internship or future job.



IG students go to Poznan

✉ Prof. Pierre Manneback



Consider 11 students and 2 professors going out for international exchange. Destination: Poznan University of Technology, one of the best in the field in Poland. Objective: meeting Polish engineering students and some of their professors, and performing some challenges in mixed teams.

The first challenge was about cybersecurity, and was called "Capture the Flag". It was one day of intensive cogitation. The second challenge was about graph theory and big data networks. The objective was to design and implement a heuristic

for detecting communities on a graph. Time was too short to build a competitive solution, but many ideas emerged from the Belgian-Polish teams.

Additionally, each student presented their Master's dissertation, and several courses were given on image processing, software engineering and visualisation.

Last but not least, we had opportunities to visit a very large computer centre, with an impressive virtual reality lab. On top of all of this, we took the time to see the city and its numerous shopping centres.

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This was an exciting experiment for all of us, thanks to our Polish partners!