



Student Chapter Universidade de São Paulo



SC-SEG USP Stewart R. Wallace Fund Report - 2019

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Between May 24th and 29th of 2019, the Student Chapter of the University of São Paulo (SC SEG USP), together with its academic sponsor (prof. Caetano Juliani) were on a field-trip to central Brazil regarding the Stewart R. Wallace fund granted to our group. The main point of the field-trip was to approximate the students to the mining industry activities, facilities and professionals. The activities were divided into two parts as it follows:

- I. Yamana Gold – Chapada Cu-Au Metamorphosed Porphyry Deposit
- II. Anglo American – Barro Alto Lateritic Ni Deposit

The first two days of our trip took place at the Chapada porphyry deposit, exploited by Yamana Gold. On the 25th, the mine and exploration teams presented the regional geologic setting of the deposit, brownfield and greenfield exploration targets, and after lunch the activities were focused on drill-core surveying, the sample presented in Figure 1 shows one of the targets described and the ore minerals present.

On the 26th, we did a field work for two explorations targets, an epithermal system close to Alto Horizonte city and a VMS system close to Mara Rosa city. The Chapada deposit is particularly interesting due the fact that it's a metamorphosed porphyry, hence all the hydrothermal mineral assemblage, structures and textures are overprinted by the subsequent tectonic events. The sample presented at Figure 2 illustrates this process, it was collected on the second day of the trip, during a field-work for regional geology recognition. What was originally an argilic alteration zone (typical of the shallow stratigraphic levels of the hydrothermal system), now is a muscovite-kyanite quartz schist that is commonly accompanied by good grades of Au.



Figure 1: 25th May (Drill-core description) - South body target with ore minerals (pyrite, chalcopyrite and chalcocite)



Figure 2: 26th May (field activity in some exploration targets) - Gold-bearing muscovite-kyanite-quartz schist, indicative of the argillic alteration zone of the epithermal hydrothermal system.

From June 27th to 29th, our activities were based on the Barro Alto ultramafic complex, operated by Anglo American. The first day of visit involved presentations by the company's team (geologists, mine- and safety-engineers and geometallurgy specialists) and visit to the sample preparation laboratory. The second day involved a visit to the mining site to get ourselves familiarized with the different subtypes of the lateritic Ni-ore. Figure 3 shows our group and Anglo American staff during the visit to the mine. On the third day during the morning, we visited the industrial plant of Anglo's operation, where the entire producing chain was covered (from ore crushing, to Ni concentration, homogenization and ultimately the formation of the Fe-Ni metal alloy). Figure 4 shows the general view of Anglo's operation plant.



Figure 3: 28th May – Visit to the Ni-lateritic mine, from left to right Yuri, Anglo American geologists Daniela and Everton, Bruna, Lucas, Angela, Máira, Aghata, Anglo American staff and Professor Caetano Juliani.



Figure 4: 29th May - Visit to the industrial plant at the Barro Alto Complex, operated by Anglo American.

The SC SEG USP is immensely grateful for the opportunity given by SEG and by both companies which received us promptly and with a lot of enthusiastic professionals. We are already looking forward to the next field-trip.