

ANU Economic Geology

Field Trip to Peru 2010

In October 2010, 17 students from the Australian National University (ANU) chapter of SEG, embarked on a two-week Economic Geology field trip to Peru. Whilst the country provided a myriad of learning opportunities with respect to culture, language and logistics, the main objective of the trip was to relate theory learnt in the classroom to reality, by examining first hand a variety of economic deposits in the field. Peru was chosen as its convergent margin setting provided the most comprehensive array of high quality deposits that corresponded with our studies, in particular skarn, Mississippi Valley Type (MVT), high sulfidation gold and porphyry systems.

Our trip commenced with a visit to the San Vicente mine near La Merced (200km NE of Lima), an MVT ore deposit producing lead and zinc. The day was spent in the core shed learning about the geological history and paragenesis of the ore, before venturing underground where we observed industry exploration techniques, examined ore in detail and collected samples. The geologists showing us around the



Before heading underground at San Vicente

mine were particularly knowledgeable and engaging and gave us a great insight into what it is like to work as a geologist in an industry environment.

Next we visited was Barrick's Lagunas Norte mine, a high sulfidation gold deposit located on the Alto Chicama property in north-central Peru. Lagunas Norte is one of only a handful of gold mines producing over one million ounces a year! After a 6 hour drive from sea level to the mine at 4200m, we fought the altitude to concentrate on a mine briefing and safety induction. Subsequently we were released to trek around

the open pit which gave us the opportunity to get a hands-on understanding of the ore deposit and to collect samples for analysis at home.

Antamina is one of the world's largest polymetallic skarn deposits and was our final mine visit. Situated in the Western Cordillera range of the Andes at an altitude of 4300m, the orebody exhibited extensive mineralisation of copper and zinc sulfides with accessory molybdenum, lead, bismuth and silver minerals.

The first part of the day was dedicated to learning about the formation, paragenesis and extent of the orebody followed by a tour of the huge open pit. As a thunderstorm approached, we were forced to abandon the tour and retreat undercover to the core sheds to examine a portion of over 600km of core! Numerous shiny, sulfide rich samples were pocketed as souvenirs and for further analysis at home.

Plans were made to visit a porphyry deposit in southern Peru, however election related protests and logistics meant that unfortunately we were unable to visit it.

The rest of our time in Peru was spent sightseeing and visiting some remarkable geological formations including the volcanic valleys of Arequipa and a visit to Volcano Misti. We capped off our trip with a visit to the extraordinary ancient Inca ruins of Machu Picchu.

Before we knew it, it was time to head back to Australia. We spent a final night in Lima exploring the city and distributing over 100kg of rock samples between suitcases, before rising early and heading to the airport.



View from the viewing platform of Antamina's open pit mine.



Students at Machu Picchu

This trip could not have been feasible without the generous support of a number of financial contributors. Whilst funding was sought from industry, in particular Barrick and Newcrest, the trip would not have been possible without the support of SEG. A huge thank you for giving us the opportunity to travel abroad to experience world class ore deposits and learn more about economic geology!