

# UNICAMP, UnB and UERJ Student Chapters' Field Trip Report

## 1. Introduction

In the beginning of 2019, the Economic Geologists Society (SEG) approved a field trip project in the northeast of the Minas Gerais State gathering three Brazilian student chapters: UERJ SEG Student Chapter, from the State University of Rio de Janeiro, UnB SEG Student Chapter, from University of Brasília, and the UNICAMP SEG Student Chapter, from the State University of Campinas.

The field trip occurred from 10 to 17 August 2019, passing through the cities of Brasília - DF, Paracatu - MG, Vazante - MG, and Coromandel - MG. The goals of the field trip were the integration of the student chapters developing professional and personal network, and the study of regional geology from the northeast region of Minas Gerais and north portion of the Faixa Brasília through technical visits to drill hole sheds of NEXA Resources, field activities organized with the same company, and a workshop and field activity about agrominerals and its influences in Brazilian economy.

## 2. Participants

Chapter	UERJ SEG Student Chapter	UnB SEG Student Chapter	UNICAMP SEG Student Chapter
Participants	Juliana Fernandes, Leticia Muniz, Luísa Guerra, Gilmar Pacha, Gabriel Alves and Iuri Valle	Hygor Viana, Jamille Freire, Anderson Matias, Leandro Campos, Lucas Telles, Yago Lira and Bruno Ciriaco	Poliana Vidal Salgado, Hevelyn Eduarda da Silva Martins, Joao Gabriel Ferreira da Silva and Endel Muller

Total of participants: 17.

### 3. Schedule of activities

Day	08/10	08/11	08/12
Activities	<ul style="list-style-type: none"> <li>-Departure of the students from Campinas – SP and Rio de Janeiro -RJ to meet the other students in Brasília</li> <li>-Tour through Brasília – DF + integration of SEG’s Students Chapters</li> </ul>	<ul style="list-style-type: none"> <li>-Workshop “Agrominerais - utilização e potencial estratégico”</li> </ul>	<ul style="list-style-type: none"> <li>-Departure from Brasília at 7am to Paracatu-MG</li> <li>-Visit to the drill hole shed of NEXA Resources - Paracatu Unity</li> </ul>
Day	08/13	08/14	08/15
Activities	<ul style="list-style-type: none"> <li>-Visit of rock outcrops on the north of the trend of the exploration target “Bom Sucesso” of NEXA Resources in the morning</li> <li>-Departure from Paracatu-MG to Vazante-MG after lunch</li> <li>-Local geology introduction on the drill hole shed of NEXA Resources – Vazante Unity</li> <li>-Visit to “Gruta Lapa Nova”</li> </ul>	<ul style="list-style-type: none"> <li>-Visit to the complex of the underground mine of Vazante Unity by the morning with breakfast, lectures and a visit to Aroeira Dam</li> <li>-Visit to the drill hole shed of NEXA Resources – Vazante Unity</li> <li>-Visit to rock outcrops from the region with economic potential to exploration of Calamina (zinc ore)</li> </ul>	<ul style="list-style-type: none"> <li>-Departure to Coromandel-MG</li> <li>-Geological profile with the lecturer Lucas Telles, responsible of the workshop “Agrominerais - utilização e potencial estratégico” for observation of phosphatic formations in his study area</li> <li>-Visit to a small diamond garimpo</li> </ul>
Day	08/16	08/17	
Activities	<ul style="list-style-type: none"> <li>-Return to Brasília-DF</li> <li>-Barbecue of integration and closure of the activities</li> </ul>	<ul style="list-style-type: none"> <li>-Return of the students to Campinas -SP and Rio de Janeiro RJ</li> </ul>	

### 4. Brief description of the activities

**Day 08/10:** The students of the SEG chapters UERJ and UNICAMP left their cities to meet the students of the UnB SEG Student Chapter in Brasília – DF to organize their stay, offered by other students, and to take a tour through the city. They visited the landmarks Palácio do Planalto and Esplanada dos Ministérios.

**Day 08/11:** Workshop “Agrominerais: utilização e potencial estratégico” with the lecturer Dr. Lucas Telles from UnB. He introduced the main minerals used in agriculture, the NPKs (nitrogen, phosphor and potassium), keys in the production of fertilizers and soil improvers, emphasizing its importance in country’s economy, whose import reaches 65% of the total used. This shows how the Brazilian market ignores its potential for further exploration and production of NPKs.

Lucas Telles also introduced the Faixa Brasília’s stratigraphy, which is composed by the phosphatic geologic formations of Coromandel-MG region, as the Retiro Formation, from Vazante Group (Dardene et al. 2000). In this region, the lecturer defined

a metallogenetic model of high phosphatic content explained in the workshop to improve the experience of the students in the activity of 08/15.



The participants of the field trip after the workshop “Agrominerais - utilização e potencial estratégico” on august 11<sup>th</sup>.

**Day 08/12:** Departure from Brasília – DF by the morning to Paracatu-MG. In Paracatu the students were welcome by the exploration geologists Aline Carlin and Edson Ricardo Ferraz, in the drill hole shed of NEXA Resources. The geologists showed the zinc and lead mineralizations explored by the company in the Paracatu Unity, in the region of “Bom Sucesso” target and the metallogenetic model of the deposit through the software Leapfrog, which part of the students had never seen in practice. Its prospective model stands out for being based on the application and the study of geophysics properties of the target, as resistivity and chargeability of the rocks.



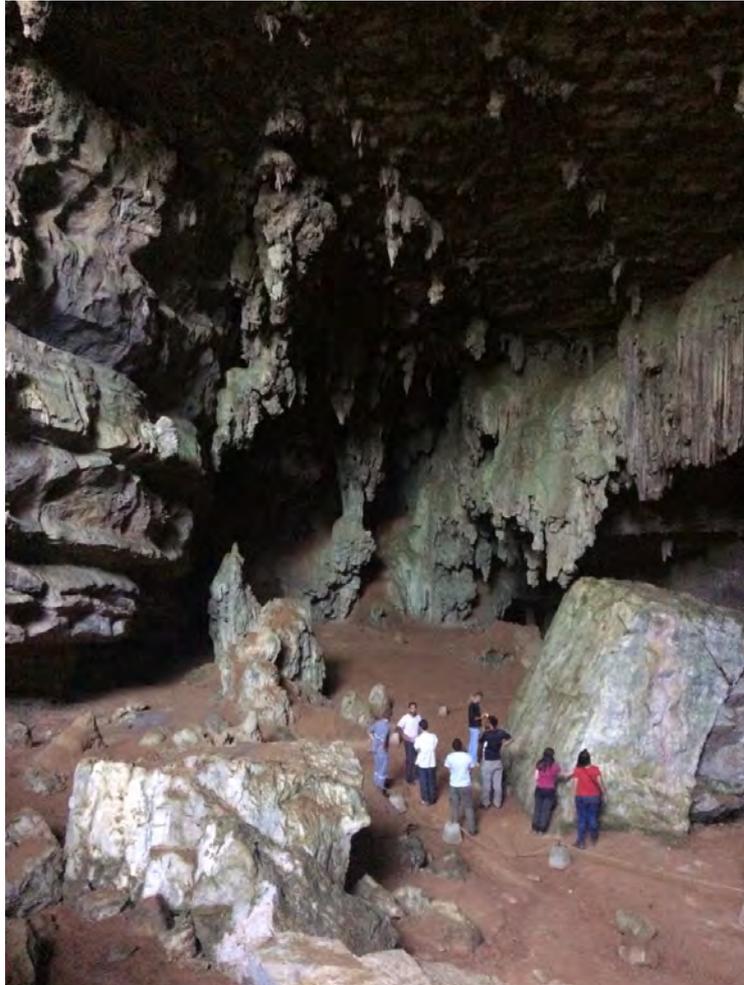
Explanation about the drill holes mineralizations with the exploration geologist Edson Ricardo Ferraz from NEXA Resources on august 12<sup>th</sup>.

**Day 08/13:** Field activity by the morning for observation of the rock outcrops from the north of the “Bom Sucesso” target’s trend guided by the responsible geologists Aline Carlin and Edson Ricardo Ferraz. They showed the group mineralized breached dolomites, which contains sphalerite, zinc sulfide an iron. They estimate over 15 years of mine life for the underground mine under the target.

After lunch, the students left Paracatu-MG to go to Vazante-MG. There they were welcome on the drill hole shed of NEXA Resources. There, the geologists James Schoeder, Denis Bastiston and their team offered a lecture about the regional and local geology, emphasizing the “Faixa Vazante” and “Falha Vazante” where the mineralized targets are found. They presented the main ore in the unity, as wellemita and calamina, both for zinc extraction. Later the geologists took the group to visit the cave Gruta Lapa Nova to show the typic rock type of the place and the difficulty found by their team to structure the underground mine because of the presence of cave, sinkholes and dissolution of the carbonate formations.



Field activity on the north of the “Bom Sucesso” target’s trend with the geologists Aline Carlin and Edson Ricardo Ferraz from NEXA Resources on august 13<sup>th</sup>.



Visit to the cave Gruta Lapa Nova in Vazante-MG with the geologists James Schroeder and Denis Batiston from NEXA Resources on August 13<sup>th</sup>.

**Day 08/14:** The students went to the Vazante Unity of NEXA Resources and were welcomed by the analyst of institutional and community relations Izabel Azevedo and the operation geologists Camilo José de Freitas Neto. The visit started with a breakfast offered by the company, followed by a lecture about the geologic characteristics and factors of the introduction of the underground mine in the local, and the structure of the company in general (economy, politics and social work) and implications of the presence of the mining in the city.

In sequence, the students were led to the “Barragem Aroeira” dam, followed by a visit to the area where they are developing a project of dry stacking that will replace the other one in the future, offering less risks to the population and environment. They also explained how their alert system works and how it is efficient in helping to control the evacuation of the area and any possible flooding, even though the surroundings of the “Aroeira” dam have almost no inhabitants. The company also emphasized the importance of population support in its projects, letting them be informed and assisted.

After lunch in the unity, the students visited the drill hole shed where the responsible exhibit the entire process of storage and cutting of the drill holes. They also went to the drill hole shed located in the center of the city to see more drill holes and other types of ore. After that the group was guided to see calamina outcrops in the field that will be explored in the future.



Lecture given by the geologists Camilo José de Freitas Neto in the Vazante Unity from NEXA Resources on August 14<sup>th</sup>.



The students visiting the Barragem Aroeira dam from NEXA Resources guided by the geologists Camilo José de Freitas Neto and security team on August 14<sup>th</sup>.



Students checking on the mineralizations of drill holes of carbonate formations in the Vazante Unity on august 14<sup>th</sup>.



Students and NEXA Resources team on the unity sign on august 14<sup>th</sup>.



Visit to outcrops of calamina ore from NEXA Resources on august 14<sup>th</sup>.

**Day 08/15:** Departure to Coromandel-MG, where the lecturer Lucas Telles oriented the confection of a geological profile through the geologic formations of the Vazante Group with high phosphoric potential. The activity lasted all day long, tracing a path close to a lot of diamond garimpos of the region. In the end of the geological profile the group visited an abandoned diamond garimpo in Coromandel.



The lecturer Lucas TELLES helping the participants to build the geological profile of the phosphatic formations of Vazante Group on august 15<sup>th</sup>.



Students in the abandoned diamond garimpo in the region of Coromandel-MG on August 15<sup>th</sup>.

**Day 08/16:** Departure from Coromandel-MG to Brasília-DF. In the late afternoon, the UnB SEG Student Chapter offered a barbecue to the participants as a form of integration and closure of the field trip.

**Day 08/17:** Departure of the students of UERJ and UNICAMP SEG Student Chapters to Campinas-SP and Rio de Janeiro-RJ.

## 5. Results and Acknowledgements

The field trip achieved all the objectives proposed in the schedule of the 4<sup>th</sup> item of this report integrating students of three great universities of Brazil and promoting knowledge between the members of the chapters.

The students were able to know and study the geology of the northeast of Faixa Brasília in a practical and efficient way, answering previous and pertinent questions about its metallogenesis. The contact with professionals of a great company as NEXA Resources was also essential to the field trip and gave the students the opportunity to experience a little bit of the struggles and challenges of following a career in the mining field and industry.

Our members of the UERJ, UnB and UNICAMP Student Chapters would like to thank SEG for the opportunity and the NEXA Resources team in Vazante and Paracatu-MG for the support and welcoming.