«Practices for Mineral Resources Statement and Study Cases»

1. Objective

In our modern mining world, estimation, classification and declaration of Mineral Resources are increasingly demanding due to the risk control required by the investors. Nowadays, Due Diligences reflect this reality, in which audits of the Mining Resources are strongly highlighted.

In this context, the Chilean Company, Asgeomin SpA (ASGEOMIN), represented by its Director Mr. Cristian Quinones, proposes this Seminar with the purpose of bring universities closer to the mining world, based on an analysis of the best practices about estimation and declaration of Mining Resources, as well as a review of the acceptable methodologies for evaluation of mining assets.

This Seminar should allow the participants to understand what essential elements and which procedures must be followed closely when revising or carrying out the classification and declaration of Mineral Resources. The points discussed will be applicable to the different phases of the cycle of a mining project; from exploration, conceptual study, prefeasibility and feasibility to operation. This seminar is addressed at professionals of mining and geology domains (mining engineers, geologists and geostatisticians) and students related to this area from Charles University.
Note: the geostatistic applied will not be considered in this seminar.

2. Author

The seminar will be conducted by Cristian Quinones. Cristian has 20 years of experience in different metals (Cu, Mo, Fe, U, Au) on mining and mining projects, in Africa, Americas, Europe and Asia. His experience has been focused as a professional in leading mining companies (Codelco, BHPBilliton, Areva, Vale) and consulting (Amec Foster Wheeler - Wood). He has been directly participating, in resource estimation, geological model, geometallurgical model, ore control, exploration campaigns, reconciliation process, sampling and QAQC. He also had an active participation in the technical audit, due diligence and technical reports (NI 43 1010, JORC), and project management.

Cristian is a geologist at the University of Concepción (Concepción-Chile, 1994-2000) and has a specialization in Geostatistics (CFSG) at the Ecole des Mines de Paris (Fontainebleau-France, 2007). Cristian is certified as Qualified Person by the Commission of Competence in Mineral Resources and Reserves (CCCRRM) of Chile and the Australian Institute of Mines and Metallurgy (AusIMM) of Australia.

Cristian was also professor of Linear Geostatistics for the mining engineer students of the Universidad de Santiago of Chile (USACH, 2016-2019). Actually, he is professor of Geology for the metallurgical engineer students of the Universidad Tecnológica Metropolitana of Chile (UTEM, since 2017) and professor of Geostatistics for geologist students of the Universidad del Desarrollo (UDD, since 2022). This seminar or part of it has been exposed in many other universities and/or companies around the world.

Currently, Cristian is the Technical Director of the consulting company (Asgeomin Spa) participating during the last 10 years as an auditor in more than 40 mining projects.

3. Content

This Seminar contains the elements that must be involved in a Mineral Resources study in accordance with different international codes (JORC, NI 43-101, others).

In this framework, databases, geological model and exploratory data analysis (EDA) will be reviewed to analyze the impact on the classification and statement of Mineral Resources. Several practical examples will also be exposed and discussed with the participants of the Seminar. The aim of the practical examples is to enrich the training through real cases revision which will promoting active participation. The following sections will be covered:

- **Introduction:**
  - o Presentation of the content, objectives and scope of the seminar.
- **International Standards:**
  - o Presentation and discussion on current codes used by the modern mining industry for the Mineral Resource Declaration, such as JORC (Australia), NI-43101 (Canada), N20235 (Chile). Correlation with the latest update in Europe (PERC).
- **Quality of Numerical data:**
  - o Presentation and discussion of good / bad practices related to the quality of numerical data on grade estimation. Particularly Quality Assurance and Quality Control (QAQC) on assays and relevant practice during the drilling and sampling campaigns.
- **Quality of Geological Data and Models:**
  - o Presentation and discussion of good / bad practices on the quality of geological data and geological modeling procedures used for the definition of geological units (GUs) that will serve as a basis for estimating resources on a block model.
- **Exploratory Data Analysis**
  - o Presentation and discussion of good / bad practices on exploratory data analysis (EDA) which aims to define the estimation units (EUs) from GUs.
- **Mineral Resources Statement:**
  - o Real and recent case studies where bad practices are highlighted, reinforcing the recent evolution of our industry.

4. Calendar and preliminary schedule

The duration of this seminar will consist in 1 full day of presentation held on Tuesday 3ʳᵈ May, 2022 at Ložiskové sbírky room (No. 120, 1ˢᵗ floor), Faculty of Science, Charles University, Albertov 6, Praha 2.

9:00 - 11:00: seminar
11:00 - 11:15: break
11:15 - 13:00: seminar
13:00 - 14:30: lunch
14:30 - 16:30: seminar
16:30 - 16:45: break
16:45 - 18:00: seminar

Cristian Quinones C.   **Jiří Zachariáš**
Santiago - Chile, April 2022   **Charles Univ., Prague**

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