

Newmont Professional Development Short Course

I. Geological Inputs to Mine Planning

Friday Nov. 3 – Saturday Nov. 4, 2017

DAY 1

I. Course introduction (8-9:30 AM)

personnel, materials, outline of activities

- Overview of the Lowell IMR on campus (Brad Ross)
- The role of geology and geologists in exploration (brownfield focus), resource development (long-term planning), and operations (ore control): perspectives from industry (Ralph Stegen)
- Pieces of a mine plan and geological input; how geology fits into the various parts of business planning & mine operations (creating value through new discoveries and translating characteristics of rocks into \$/hr) (Rick Preece)

II. Overview of ore deposit mineralogy and geology (9:45 AM-12:30 PM)

- Porphyry and porphyry-associated deposits (Eric Seedorff) (1 hr)
- Other types (Mark and/or Isabel Barton)
- Geometry of different deposit types and mining methods (Isabel Barton)

Lunch break (box lunches provided)

III. How minerals affect the overall mine plan (geometallurgy) (1-4 PM)

- Overview of mineral processing and extractive metallurgy (Jaeheon Lee/Isabel Barton)
- Mineralogical inputs to processing and extraction plans (Isabel Barton)

IV. Supplemental activities (4-5 PM)

- Activities to supplement and reinforce geological concepts discussed during day (Isabel Barton)

V. Close-out of Day 1

DAY 2

Recap of Day 1 (8-8:30 AM)

VI. The data of geology and geometallurgy, from exploration to processing (8:30 AM-12:30 PM)

- Bench mapping: mineralogy, macroscopic textures, alteration, spatial variability, structural features, controls on mineralization (Mark/Isabel Barton)
- Core and RC chip logging: some of the above plus depth control (Mark/Isabel Barton)
- (break)

- Mapping and drilling (outside mine area): investigates future resources/reserves, supports design and location of infrastructure and waste management sites (Rick Preece)
- Sampling and variability of characteristics measured (Jaeheon Lee)
- Methods of metallurgical testing (Jaeheon Lee, Isabel Barton)

Lunch break (box lunch provided)

VII. Data Interpretation and Analysis (1-3 PM) (Rick Preece)

- Geological models – depiction of key geological controls to grade & other characteristics
- Block models - how they are made, what they involve, pitfalls and advantages
- Assessment of uncertainty: reconciliation, classification, and drill planning

VIII. Results of the block model (3-4 PM) (Tito Tenorio)

- Mine planning (geometry, locations of buildings, etc.)
- Mine-to-mill optimization
- Assessment of uncertainty – risk to achieving Business Plan

IX. Operational geology (4:15-5 PM) (Eric Sedorff)

- Ore control
- Case studies

X. Conclusion