NW Mineral Province Deposit Atlas

Chapter 7: Eloise Cu-Au deposit

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Exercise 1 – PAPER!

• Aim – produce a quick and dirty interpretation and locate the three deposits in this area
• Materials
  - Colour E-shaded VD – weak linear colour stretch
  - Colour E-shaded VD – histogram equalised stretch
  - Transparent overlay and a sharpie
• Time 10-15 minutes
Chapter 7: Eloise Deposit Atlas

NW Mineral Province Deposit Atlas

As part of the NW Mineral Province New Discovery Program, the BRC is compiling an atlas of many of the major deposits in the Northwest Mineral Province. Outpouts from this project will serve as a resource for explorers to improve their capability to recognise the signatures and haloes of major deposits in this region, and to provide material which is complementary to the core collections being assembled in the Mount Isa Core Library.

Chapter 1 - Introduction  Chapter 2 - Mount Isa  Chapter 3 - Ernest Henry  Chapter 4 - Selwyn Region  Chapter 5 - Cannington, Pegmont and Maroon
Eloise Deposit – Geoscience Analyst

[Image of a software interface with various folders and files listed, including DTM, drill data, ore lenses, and geology.]
Eloise Deposit – Brief History

Mid-1980 to early-1990’s
- Discovery by BHP Minerals (1986) based on aeromagnetic targeting and follow-up ground geophysical investigation through cover sequence

Mid-1990’s
- Eloise sold to Amalg Resources in 1994 for $13.25 million followed by development of underground decline (1995) and first ore produced in 1996

Early-2000’s
- Production as of Dec 2002 of 3 Mt @ 4.19 % Cu and 1 g/t Au. In 2003, Amalg Resources renamed Breakaway Resources Limited

Mid-2000’s
- Eloise sold by Breakaway Resources Limited to Barminco Pty Ltd (now FMR Investments Pty Ltd) and operated until care and maintenance in 2008

Mid-2000’s to present
- Eloise reopened in 2011 and still owned and operated by FMR Investments Pty Ltd. A total pre-mining resource of 10 Mt @ 3.2 % Cu and 0.7 g/t Au
Eloise Deposit – Workshop Exercises
Eloise Deposit – Workshop Exercises

Exercise 2: Eloise shoot plunge

i) Using data in the GA file, look at the shoot geometries, structures, and geological datasets around the main Eloise “shoot”

ii) What are the possible explanations for this shoot?
Baker, 1994

Figure 4.1: Structural orientation data (true N, Schmidt equal area net; data source compiled from Appendix 2 and Laing, 1990b).

a. Poles to bedding $S_0$ (+ n=8); $F^{0.5}_2$ fold axes (+ n=6).
b. Poles to cleavage $S_2$ (all data, shallow to moderate dips correspond to $D_3$ hinge zone; n=181).
c. Contoured poles to cleavage $S_2$ (contour interval 1%/1% area).
d. Mineral lineations $L_m$ (n=76). $L_m$ represents a combination of $L^2_2$, reactivated $L^{0.5}_2$ during $D_3$ shear and metamatically altered $L^2_2$.
e. Contoured mineral lineations $L_m$ (contour interval 1%/1% area).
f. Poles to axial planes $S_k$ (n=8).
g. Poles to $S_2$ cleavage in $F_3$ hinge zone (n=33).
h. Poles to Stage III to V mesoscopic faults (n=62).
i. Contoured poles to mesoscopic faults (contour interval 1%/1% area). The moderate west dipping fault planes are associated with the Median Fault.
Baker, 1994

- Macroscopic Boudinage – ie the shoot is a boudin neck (no macroscopic evidence)
- Intersection of stage II veins and bedding (no macroscopic evidence)
- Intersection of lode shear zones and contact between meta-arkose and quartz-biotite schist (preferred explanation)
Exercise 3: A geochemical data set from the Geochemistry Tool Kit (Hannan et al. 2018) is provided in the Geoscience Analyst file. Based on a 2009 Xstrata orientation soil survey

i) Using Geoscience Analyst plot the position of these samples and use the rendering settings to show target element concentrations

ii) Does the data show anomalous values consistent with the style of mineralisation?

iii) What are the limitations of the dataset and how could this be improved?
GTK Geochemistry files

AQR – Aqua regia -5mm soil fraction ICPMS finish
• Try plotting Ag, Cu, Bi, Ni (and others if you want)

GORE – proprietary soil gas method (see GTK App A – provided)
• Try plotting carbon disulphide, propane

MSG – Metal Soil Gas (see GTK App A – provided)
• Try plotting Cu, Zn (and others if you want)

Please see your doctor if you think GORE and MSG might be right for you.
Exercise 4: Preliminary data has been provided from TruScan™ XRF scanning of four drill holes from Eloise

i) Plot the location of these drill holes in Geoscience Analyst

ii) Use the rendering settings to show the distribution of key elements indicative of lithology, alteration and mineralisation

iii) Refer to the down hole TruScan™ plots in the Atlas (Fig. 7.17) – what steps would you take to validate this preliminary dataset?
Thank you

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