Cloncurry IOCG Short Course

The EGRU IOCG short course in February attracted over 50 geologists from projects across the district and Australia, with 15 different organisations and companies represented. Also in attendance was a rag-tag bunch of students (including myself), subsidising the opportunity by driving minibuses and flipping sausages.

Prior to the conference, we spent a day at Eloise Copper Mine – a small, privately-owned copper exporter 60km southeast of Cloncurry. Geology superintendent Sara and former JCU student Brendan gave up the best part of their day to show us the deposit model, the core shed and the ROM pad. Naturally the vehicle was much heavier when it left site than when we arrived!

The next morning the conference was opened by Dr Zhaoshan Chang, Director of EGRU. He provided an overview of IOCG classification in the context of Olympic Dam and other early work done on the category. The five things all ‘Iron Oxide Copper Gold’ (IOCG) deposits share are 1) Economic quantities of Cu ± Au, 2) Hydrothermal veins and breccias, 3) Replacement textures in specific structural sites, 4) The presence of magnetite or hematite, or Fe-Ti levels elevated beyond average crustal abundance, and 5) No clear spatial association to igneous intrusions. I must add a sixth observation: All ‘IOCGs’ seem to have a bunch of geologists arguing over genesis, structural controls and how to classify them; a dilemma that personifies the nature of our discipline. The purpose of the conference was to describe the diverse aspects of the Cloncurry mineral system, through presentations on the general area and specific deposits.

Pat Williams set the regional context, and gave an overview of historic work done on Ernest Henry – the archetypical IOCG (with I, O, C and G all present). Several presenters followed, including JCU Honours student Michael Fuss, who explained his research on fluids in the Ernest Henry carbonates.

Richard Lilly of MIM-Glencore gave an excellent overview of the Ernest Henry discovery and under-cover exploration in the district, describing the original airborne surveys which defined several significant magnetic anomalies under cover north of the town. The biggest of these anomalies is now known as Ernest Henry, but experience has shown that not all these anomalies are mineralised.

George Case then followed with a description of his PhD findings for E1 and Monakoff; two successfully exploited magnetic high anomalies. Rob Duncan was the last presenter, and gave a comprehensive overview of the Selwyn-Mt Dore Corridor.

Specific deposits and exploration projects were the focus of the second day. Richard Lilly kicked it off with a presentation on the Great Australia Deposit, discovered and developed by the original Mr. Ernest Henry, responsible for Cloncurry’s beginning. We also learned about Osborne Mine, the new Minotaur discovery (Artemis) and received an update on the Roseby Corridor mineralisation including Little Eva and Turkey Creek.

The remainder of the three day conference included mine site tours and core viewing. Mine visits included CopperChem’s Great Australia mine, The Lorena Au mine and Glencore’s Ernest Henry Mine. Core viewing also took place at these sites with extensive discussions. Many thanks are due to all of the personnel at these operations who enabled the tours to go ahead.

Several hours were also spent looking over core at the Mount Isa Mines Resource Development Cloncurry Barracks and the Exco core yard. Core included trays from Chinova’s Starra, Osborne and SWAN deposits, Minotaur’s Artemis discovery and Altona’s Little Eva deposit. Many of the deposits share remarkable textural similarities including the district’s signature red rock alteration.

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Because Richard Lilly is a man with unlimited energy, he not only helped organise the event, but hosted cricket matches each evening, amidst cooking and talking about rocks. This lead to the prestigious Barracks Cricket Awards (BCA). The Champagne Moment Trophy went to Claudio Sheriff (Sandfire Resources) for taking a caught-and-bowled reflex catch with his armpit, after the ball deflected off a power cable.

The Most Memorable Moment (MMM) Award was won by JCU honours student Ross Christie, for turning the ball into the cricket-equivalent of breccia. For their achievements, Claudio received a ‘bazooka’ hand-lens, while Ross inherited Terry, the Glencore garden gnome.

Richard closed the conference on a philosophical note. He discussed how the different types of deposits throughout the Cloncurry Mineral System could be described as curries, at different stages. Deposits like Ernest Henry are the gourmet main, with all the expected components (I, O, C and G). Also on the menu are specialty foods like Artemis, with its iron sulphides rather than oxides (ISCG), and the left overs of the ore fluid may look like Lorena, with nothing but gold in highly reduced rocks (…G). The focus of new research, he suggested, could be to develop a regionally correlated study of the various fluid systems that shaped, in Michael Rubinach’s words, ‘the world’s most metasomatised rocks’. Richard also suggested that we might refer to the deposits in the district simply as ‘The Cloncurry Mineral System’ and seek to understand how they are all linked, rather than simply labelling them ‘IOCGs’.

For students, it was a great opportunity to learn more about the region and meet people who are passionate about rocks. With thanks to Richard Lilly, Zhaoshan Chang and Judy Botting for all your work in organising and hosting the event.