Testing and quantifying geological uncertainty – the OD story

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# ABSTRACT

In the pre-mining stage in the development of mineral deposit, the determination of the final geological model is critical, particularly in the deep underground mining environment, where changing stope designs and mine sequencing must be assessed in light of other material factors such as geotechnical conditions, ventilation, development timeline and so on. As such, mineral resource practitioners must assess the potential risks of having a too wide or too close final drill spacing, that is used for the final mine design and sequencing. This paper focusses on the geological uncertainty issues in IGO’s Odysseus nickel sulphide deposit, north of Leister in WA, where the sulphide mineralisation is disrupted by nickel barren pegmatite bodies, that have intruded, filled, and expanded shear zones through the sulphide-bearing meta-ultramafic orebody. Testing of this uncertainty has involved categorical simulation of the pegmatites based on the pre-grade control drilling, application of alternate implicit modelling of the pegmatites bodies, use of AI software as a verification test on the implicit models, and finally the early results of the close-spaced drilling deemed sufficient to define the pegmatite geometry prior to mining.