

Reverse Circulation (RC) Drilling for Gold: Sampling Method Validation – Córrego do Sítio Mines, Brazil

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Keywords: Geology, RC Drilling, Sampling, Orogenic Gold, Grade-Control.

ABSTRACT

In Brazil, the Rio das Velhas Greenstone Belt, largely located in the Iron Quadrangle region - Minas Gerais state, is the most important gold district in the country. The Córrego do Sítio (CdS) Mines, target of this work, are orogenic gold deposits operated in underground and open pit mines for more than decades by AngloGold Ashanti Brazil.

Reverse Circulation (RC) Drilling has been re-implemented this year of 2018 on CdS Open Pit Mines, instead of using conventional Diamond Drilling, in order to optimize drilling efficiency, aiming to convert reserves, bring assurance to the mine production plan and gaining ounces on a historic gold deposit, characterized by multi-narrow veins with high nugget-effect.

Previous RC-Drilling campaigns already made on the past years at the deposit, without the required quality control on the sampling procedures, led to unreliable assay data, which ended up being excluded from the modelling and resource estimation processes. This work aims to present and demonstrate the quality controls undertaken and implemented on the drilling campaign in order to assure and have it validated in terms of sample quality and representativeness. The splitting and sampling equipment used is Metzke TM Splitter, and the main controls used include duplicate analysis, mass balance, moisture control, influence of water level interceptions, twin-holes, validation with diamond drill-holes, reconciliation with channel samples and estimated block models, comparisons with other sampling systems (rotary and riffle-splitter).

All this data regularly collected during rig operation, generated significant amount of information and parameters of the whole RC drilling method performance in terms of sample quality, which were analysed to compose QAQC and method validation reports. The good use of this validation controls related to the RC samples are expected to bring reliability to the deposits mineral resources/reserves, especially in terms of ore positioning, gold content, grade and thickness.

