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Newmont Geochemistry, the Untold Story

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As Newmont moves into its second century, there comes an opportunity to reflect on a history of commitment to exploration, innovation and technology. Newmont's 100-year journey has populated the gold explorers' toolbox with geophysical techniques as notable as induced polarisation; however, the parallel story of the development of industry-leading geochemistry is yet untold. Although there are no silver bullets in gold exploration, a 40-year effort by Newmont's geochemistry team with a focus on sampling theory, data integration, and aggressive field programs has resulted in proprietary geochemical exploration tools which are still seeing active development and deployment.

Newmont's Bulk Leach Extractable Gold (BLEG) stream sediment sampling technique was developed over the 1980s and 1990s as an efficient and reliable low-level regional reconnaissance screening tool. As gold is a notoriously difficult element to analyse in stream sediments due to highly variable field duplicates, the technique was engineered to achieve acceptable reproducibility of results at the lowest detection limits available at the time. Amongst several discoveries, Newmont BLEG is credited for revealing the world class Batu Hijau Cu-Au porphyry system in Indonesia (Maula and Levet, 1996).

More recently, exploration has trended away from a focus on outcropping systems into the cryptic world of undercover targeting. This focus has seen Newmont's next generation of geochemical tools emerge; Deep Sensing Geochemistry (DSG) and Terrain Mapping Geochemistry (TMG). Although DSG was first named publicly in 2013, these techniques were developed following years of internal and external research in fine fraction geochemistry, applied field geochemical and regolith control, and advances in analytical laboratory capabilities using ultrapure digestions and instrumentation pushing elemental detection limits below crustal abundance.

Explorers today are experiencing a geochemical renaissance where these tools, leveraging applied geochemistry fundamentals are integrated with other advanced exploration tools and datasets to deliver the next generation of discoveries.