

# Rethinking the World's Largest Gold Producing Complex through Geologic Improvements to Mineral Resource Estimates

*JM Clark<sup>1</sup>, M Samson<sup>2</sup>, C Le Cornu<sup>3</sup>, C Fiddes<sup>4</sup>, M Vandelle<sup>5</sup>, A Williams<sup>6</sup>, and M Roux<sup>7</sup>*

1. Regional Chief Geologist, Nevada Gold Mines, Elko, Nevada, 89801. Email: [Jesse.Clark@nevadagoldmines.com](mailto:Jesse.Clark@nevadagoldmines.com)
2. Principal Geostatistician, Nevada Gold Mines, Elko, Nevada, 89801. Email: [Matthew.Samson@nevadagoldmines.com](mailto:Matthew.Samson@nevadagoldmines.com)
3. Manager, Resource Geology, Nevada Gold Mines, Elko, Nevada, 89801. Email: [Christopher.LeCornu@nevadagoldmines.com](mailto:Christopher.LeCornu@nevadagoldmines.com)
4. Lead, R&R Governance, Nevada Gold Mines, Elko, Nevada, 89801. Email: [Craig.Fiddes@nevadagoldmines.com](mailto:Craig.Fiddes@nevadagoldmines.com)
5. Group Resource Geologist, Barrick Gold, Africa & Middle East. Email: [Mathias.Vandelle@barrick.com](mailto:Mathias.Vandelle@barrick.com)
6. Mineral Resource Manager, Carlin Complex, Nevada Gold Mines, Elko, Nevada, 89801, Email: [Adrian.Williams@nevadagoldmines.com](mailto:Adrian.Williams@nevadagoldmines.com)
7. Regional Lead, Resource Geology, Barrick Gold, Elko, Nevada, 89801. Email: [Mark.Roux@barrick.com](mailto:Mark.Roux@barrick.com)

## ABSTRACT

Nevada Gold Mines was established in 2019 as a joint venture between Barrick Gold (61.5%), the operating partner, and Newmont Corporation (38.5%), consolidating over fifteen operations that produce around 3 Moz of poured gold per annum, supplanting Nevada Gold Mines as the largest gold producing complex in the world. The prolific Carlin Trend has produced over 100 Moz of poured gold since discovery of the archetype carlin deposit in 1961. With about 100 Moz of Mineral Resources, and several projects awaiting various stage-gates, this complex offers significant organic growth opportunities.

The technical challenges of bringing this venture together were immense. The amalgamation of three company cultures within a short period of time introduced significant change to a team of over 180 geologists. Though, the consolidation of Trends offered an immense opportunity to unify the geologic understanding of Carlin-type deposits. Recognizing this, a concerted effort in geologic modeling in conjunction with aggressive organic growth drilling has enabled a paradigm shift in the structural understanding of mineralization controls. This led to a shift in understanding the complex tectonic evolution of Nevada that dictates the local orebody geometries observed. The principal controls on mineralization are intersection lineations at the confluence of favorable lithology and/or fold hinges.

Value is not realized until it is built into a mine plan. Armed with a new geologic foundation, the focus shifts to integrating detailed orebody knowledge into resource models to improve mining plans. With sustainability in mind, simple Ordinary Kriging workflows were preferred as the minimum baseline standard. The focus is always on geologically driven estimation domains and trend interpretations to support dynamic anisotropy. After eighteen-months, all workflows have been completely overhauled compliant to regional standards.

This paper will discuss the technical and cultural challenges in pursuing the significant changes, as well as the methodologies to workflows adopted to reinforce the geo-centric mindset that we pursue.