

Ideon Muon Tomography Solution Unlocks Ore Body Knowledge at Rio Tinto's Bingham Canyon Mine

High-resolution subsurface intelligence to improve production predictability at one of the world's largest copper mines

VANCOUVER, BC, CANADA, September 3, 2024 /EINPresswire.com/ -- Canadian subsurface intelligence leader [Ideon Technologies](#) marks its first borehole muon tomography deployment in the USA, and its first-ever in-pit mine imaging program, with an installation at one of the largest surface mines in the world – Bingham Canyon. Ideon is partnering with [Rio Tinto](#) and its [Kennecott copper mine](#) to enhance their understanding of the geology of the pit and map underground workings at the century-old mine, which measures more than 4 km wide by 1200 m deep and produces copper to fuel the energy transition.



Ideon deploys muon tomography at Rio Tinto Kennecott's Bingham Canyon Mine

Ideon provides a high-volume, high-resolution, high-velocity Earth model that can improve the accuracy of density estimation, expedite geological modelling, and directly inform production planning – maximizing the potential for cost-effective recovery of metals. This solution is being trialed to assist Rio Tinto in delivering accurate and timely orebody knowledge in an area of the Bingham Canyon mine that will contribute to copper production goals.

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Gary Agnew, CEO & Co-Founder

The primary goal of the muon tomography deployment at Bingham Canyon is to achieve a measurable improvement in variation between the mining model density and the

measured density, increasing value through better definition of drill targets and confirming the

location of old, underground historical workings. “Given the significant density contrast within the skarns themselves, between the skarns and the relatively low-density waste rock (quartzite) surrounding them, and with air gaps (historic underground workings) throughout the mine site, muon tomography can be a revolutionary tool for ore characterization at Rio Tinto Kennecott,” says Mark Paine, Practice Leader Orebody Knowledge (OBK) Technology, OBK Centre of Excellence at Rio Tinto.

With multiple muon detectors positioned down boreholes from a single bench in the Bingham Canyon pit, Ideon can map density at metre-scale precision over tens of millions of cubic metres of rock. The Ideon muon imaging solution consists of an advanced suite of hardware and software, including multi-physics fusion capability, data analysis, and geological interpretation services. It provides 95% certainty on measurement of density in subsurface environments where the scale, grade, and location of mineral deposits and geologic features are generally uncertain. Ruggedized for the most demanding of mine environments, the Ideon borehole muon imaging solution images upwards towards the surface without impeding – or being impacted by – noisy mine activity. In this case, overburden will be continuously removed in the target area throughout the imaging program, with Ideon leveraging its AI-powered workflow to develop a dynamic Earth model.

Ideon harnesses the energy from supernova explosions in space to image deep beneath the Earth's surface. Using sub-atomic particles called muons, Ideon creates high-resolution 3D density models that help geologists identify, map, characterize, and monitor mineral deposits, subsurface voids, and other geologic anomalies across the full mine life cycle – from exploration to reclamation. Ideon CEO & Co-Founder Gary Agnew praised Rio Tinto's leadership and Kennecott site teams led by Mine Geology Manager Jen Ellis Evans and Kennecott Geologist Robin Butz in deploying innovative technology in tough mining environments. “We all know that the world urgently needs an increase in the supply of critical metals like copper, and it's clear that to meet our 2050 climate reduction targets, this supply must come from its largest existing mines. Rio Tinto is leading the way in leveraging the power of the Ideon platform to efficiently unlock the metals needed to secure our renewable energy future. Their experiences in open-pit operations are common across the mining industry. Ideon is helping Rio Tinto – and can help others – optimize operations to get those metals to market safely and quickly, while significantly reducing cost.”

About Rio Tinto (www.riotinto.com)

Rio Tinto is a global mining and materials company with operations in 35 countries, producing iron ore, copper, aluminium, critical minerals and other materials needed for the global energy transition and for people, communities, and nations to thrive. Rio Tinto has a dual-listed structure, with the businesses of Rio Tinto plc, quoted on the London Stock Exchange and Rio Tinto Limited, quoted on the Australian Stock Exchange, managed as one company with a single board of directors. Rio Tinto Kennecott is a division of Rio Tinto Group, with headquarters in South Jordan, Utah, USA. Kennecott operates the Bingham Canyon Mine in Salt Lake County, Utah, USA.

About Ideon Technologies (www.ideon.ai)

Ideon Technologies uses the energy from supernova explosions to image down to 1 km (0.6 miles) beneath the Earth's surface. A spin-off from TRIUMF (Canada's particle physics lab), Ideon is a world pioneer in cosmic-ray muon tomography. By transforming muon data into reliable 3D density maps, Ideon helps geologists identify, characterize, and monitor mineral deposits with confidence. This reduces risk and cost of traditional methods, while saving time, optimizing return, and minimizing environmental impact across the mining value chain. In turn, this is helping accelerate the world's transition to low- impact mining and transform how companies find the critical minerals required to power the global shift to clean energy.

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