

Pipe Stalker® Revolutionizes Kimberlite Exploration

Background

Even though world diamond production has tripled since 1980, diamonds remain a scarce resource. Each year, hundreds of millions of dollars are spent on exploration activities around the globe. The process is slow and the chances of success are generally low.

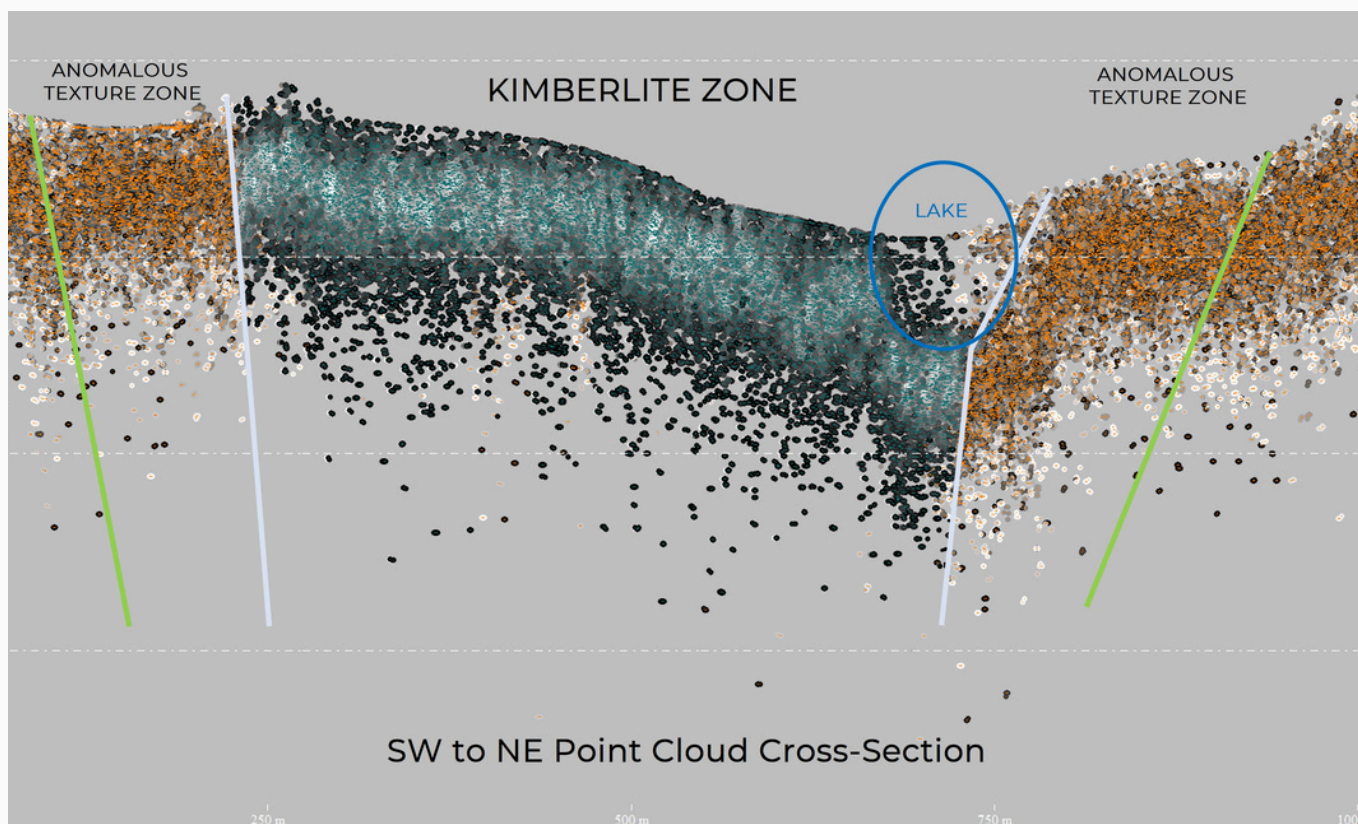
As known kimberlite deposits are mined and exhausted, the search for high-value deposits require explorers to work in increasingly challenging environments, with a focus on low-risk, cost-effective solutions that have less impact on the environment.

Pipe Stalker® is a breakthrough tool that enables sustainable, cost-effective detection of new kimberlite occurrences in complex scenarios: extreme weather conditions, deep deposits, challenging environments, underwater and remote locations.

This technology maps and models the Earth's surface down to bedrock—hundreds of meters underground and through water, making it possible to “see through” water, vegetation, ice, trees, rocks and soil to identify structures and lithologies.

Auracle studied known kimberlite occurrences on Somerset and Baffin Islands, extreme environments covered by overburden, numerous water bodies and with no apparent signs of kimberlite pipe occurrences. Auracle developed new AI to search for subsurface and underwater signature features and variables unique to kimberlite deposits.

Pipe Stalker® identified the structure, subsurface features and environments unique to kimberlite pipes that include flared structural margin or verge, higher reflective inner material, very high reflectance ring and a shatter zone that is bound by blind faulting.



This is a Pipe Stalker® Point Cloud, which represents the subsurface, in 3D. This illustrates Pipe Stalker® capacity to differentiate four subsurface variables: differences in densities; differences in textures; differences in resistivities and structural bounds. In this case, anomalous texture zones were identified and the kimberlite zone was selected, with distinct structural bounds, even under water.

Pipe Stalker® provides well-defined 3D views of target zones, reducing time and cost in locating viable kimberlite pipes. With this level of prediction and location accuracy, especially for deep holes, fewer drill holes are needed to test prospective targets.

The Pipe Stalker® technology can be fused with and enhances 3D seismic and other geophysical inversions to produce highly graphic 3D information.

With exposure of the non-outcropping near surface, geological maps and models are corrected and improved with structural features including non-apparent strike and dip that deepen and refine targets.

Pipe Stalker® allows for the exploration of new kimberlite occurrences in complex scenarios including extreme weather conditions, deep deposits, under cover and harder rock mass and high-stress environments.

Embracing innovative technology enables responsible and ethical detection and development of these rare natural resources. As a satellite technology, Pipe Stalker® creates no unnecessary human footprint and does not cause cultural interference.

Pipe Stalker® is an innovative exploration tool that embraces AI which is needed to meet the ongoing challenge to find, evaluate and develop the next generation of kimberlite deposits.

