

SEG 100 Conference: Celebrating a Century of Discovery

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Linking All Valuable Primary Resources to Volcanic Glass

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The greatest rock building component is seriously discounted in geology at all levels. The almost complete lack of turbidite-ash fall tuffs and Bouma sequences in the mineral industry geological naming of rocks, especially in the Archaean and Paleoproterozoic shields, has led to a profusion of intrusive sills that do not make sense.

The examination of modern volcanic arc provinces will show that the majority of the rocks are subaerial-submarine ash-derived sediments. The huge land and submarine basins of Australia and North America are made up of large amounts of ash derived sediments, which are correctly named by oilfield geologists but change as soon as the mining geologists look at them. The definition of oil and gas by studying LIPs has been critical in identifying hydrocarbon deposits in many basins, notably in the North American, where vanadium identifies the hydrocarbon temperature and formation.

A simple look at any volcano will tell the observer that ash is very important to the shape and makeup of the cone. When these ingredients are deposited in water, fresh or salty, there is a fundamental bonus to the start of all systems that yield hydrothermal orebodies, and that is interstitial water. The other critical ingredient is volcanic glass, which is not silica, as most geologists think, but is basalt-andesite in composition. When this hydrates, it goes to the ferrous clay chlorite, and, from there, the journey to mineral and hydrocarbon deposits is well recorded.

I will demonstrate that the formation of gold, BIF and pisolite iron ores, and nickel and copper ores are related to this process. The ability of the mineral shere to adopt oil field processes will also be a great boon to exploration, and the work by Ross Large and others will peice this together in leading to new discoveries.