

**SEARCHING FOR THE SOURCE
OF THE
TITANIC HEADSTONES IN HALIFAX
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**FORENSIC IGNEOUS PETROGENESIS: LOCATING THE SOURCE QUARRY
FOR THE “BLACK GRANITE” TITANIC HEADSTONES IN HALIFAX, NOVA SCOTIA**

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ABSTRACT

In Halifax, Nova Scotia, 149 victims of the 1912 sinking of the Titanic lie beneath petrologically identical “black granite” headstones. Those headstones, supplied by the White Star Line, arrived in Halifax in late 1912, but no known historical document reveals their source. They consist of a medium- to coarse-grained olivine-bearing gabbro, with cumulus phases consisting of randomly oriented euhedral plagioclase laths, corroded olivine, and titanomagnetite, and intercumulus material consisting of titanite with reaction rims of titaniferous hornblende, both of which are variably uranitized, and biotite. Three types of forensic evidence (*quantitative* – radiometric age of 422.1 ± 1.3 Ma ($n = 17$), mean olivine $\text{FeO}/(\text{FeO}+\text{MgO})$ ratios ranging from 0.43 to 0.46, clinopyroxene rim trace-element compositions (35 elements), and whole-rock chemical compositions (48 elements), including statistical analysis of all these data showing no significant differences between the headstones and their putative source quarry; *qualitative* – mineral assemblages, modal proportions, textural parameters, style and degree of alteration; and *circumstantial* – regional reputation, quarrying history, local logistics, regional transportation, McGrattan marker) connect the Titanic headstones to the St. George Batholith in SW New Brunswick. Precise matching of any dimension stone to its source quarry is problematic, because that material connects only to a void in the quarry. Ideally, all physical-chemical-temporal properties of the dimension stone and source quarry should match, both quantitatively and qualitatively, but in reality only the ages must almost certainly match. Thus it is remotely possible for the “right” quarry to mismatch most of the properties of the dimension stone, and for a “wrong” quarry to match most of the properties of the dimension stone. However, in the case of the Titanic headstones, the cumulative weight of all the quantitative, qualitative, and circumstantial evidence, combined with a process of elimination and application of Ockham’s razor, indicate that the Charles Hanson Quarry near Bocabec, SW New Brunswick, is a highly likely source for the gabbroic Titanic headstones in Halifax, Nova Scotia.



One last look at the distinctive snowflake texture of the Titanic headstones.