

A preliminary look at the field and petrographic relationships of intrusions of the Tilting Harbour area, Fogo Island, Newfoundland, Canada

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The geology of Fogo Island shows a complex history of magmatic intrusions intruding volcanic and sedimentary rocks. Field work between Tilting Harbour and Oliver's Cove on the northeastern coast of Fogo Island included mapping this area to determine relative age relationships, describe the rock units, and sample for petrography and geochemical and geochronological analyses. Mapping determined that there are intrusions of granite, biotite and hornblende-quartz diorite and mafic layered rocks within approximately 1 km of coastline. These are cut by late bimodal mafic-felsic dykes. The layered rocks are represented in two different areas: the first area extends across the mapped peninsula from Tilting Harbour to the east side of the peninsula and has been intruded by a differentiated diorite sill. The other is a mafic sill that shows differentiated cumulate layers that have been sampled for geochemical analysis and is intruded at one end by a bimodal dyke. Polished thin sections were made of the various units and across the layering of the mafic sill. Petrographic work has so far shown cumulate layering of olivine/pyroxene/plagioclase with oikocrystic amphibole within the first layered mafic unit, and different generations of amphibole with relict pyroxene within the diorite sill among other interesting relationships and textures. The electron microprobe will be used to analyze cumulate phases and any other samples of interest to document the change in mineral composition with differentiation, and the SEM-MLA will be used as a complement to the petrography to look at textures on a finer scale. U-Pb zircon ages of 2 key rocks will be determined by thermal ionization mass spectrometry in order to correlate magmatic events on Fogo with those elsewhere in Newfoundland.