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LITHOLOGIC INFLUENCE ON PSEUDOTACHYLYTE-BEARING FAULT ZONES IN THE IKERTÔQ SHEAR ZONE, GREENLAND: AN NSF REU STUDY

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High-resolution mapping of an extensive pseudotachylyte system in the Ikertôq shear zone of southwestern Greenland shows that the occurrence and style of interconnected pseudotachylyte-bearing faults are influenced by the lithology of the host rocks. The Ikertôq shear zone is a frontal structure of the Paleoproterozoic Nagssugtoquidian Orogen of which includes a 50 kilometer long pseudotachylyte system. Pseudotachylytes are vein-like rock melts that formed as a result of friction in shear zones, and are considered a proxy for paleo-earthquakes. These structures give insight into seismic behavior in the mid-upper crust. As part of an NSF REU, field observations were collected and laboratory analysis will be performed using electron microprobe, optical petrology, and scanning electron microscope (SEM) instrumentation. Our mapping of the lithologic units and boundaries along a transect of Sarfannguit Island identified lithologies varying from mafic intrusions, gabbroic pods, tonalite, felsic and intermediate gneisses, and metasedimentary rocks. Field observations such as rock unit descriptions, lithologic logs and maps show that the degree of foliation in a gniess has significant influence on the development of pseudotachylyte and fault geometry. Areas with well-foliated gneiss are characterized by a complex geometry of throughgoing pseudotachylyte-bearing

faults, damage zones, imbricate wedges, and relay faults. In areas with less-foliated, thicker-banded gneiss, pseudotachylytes are less abundant and exhibit a less complex Riedel geometry. Our ongoing work will focus on gaining a better understanding of the petrology and tectonic setting of the transect.