METAMORPHIC STRATIGRAPHY ALONG SOUTH HARDSCRABBLE CREEK, WET MOUNTAINS, COLORADO

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A sequence of over 3000 ft. of Proterozoic metamorphic strata is exposed north of South Hardscrabble Creek. Although rocks west of the nearby Ilse fault are tightly folded and faulted, these rocks are only slightly deformed. Most of the sequence comprises meta-sediments, with a paleo-channel indicating that the rocks are right side up. The presence of a meta-gabbroic sill suggests a similar origin to rocks described from nearby in Salida and Gunnison.

The meta-sediments were divided for mapping purposes into eight predominantly red or blue units. The blue units are amphibolites (52% SiO_2) and biotite gneisses (67% SiO_2), with variable amounts of quartz, garnet, and sillimanite. They are slightly migmatized. A retrograde sillimanite-microcline-quartz-muscovite reaction places this entire sequence in the uppermost amphibolite facies. The red units contain quartz and 2 feldspars, and average 76% SiO_2. They may be meta-arkoses, or less likely differentiated portions of an originally homogeneous sedimentary unit, bedded, sillimanitic quartzite. The two types usually wedge out into each other along sharp contacts, with minor small-scale interfingering.

A small sill of meta-gabbroic composition (tholeiite, 49% SiO_2) shows well preserved ophitic texture. A Zr-Ti plot puts it in the island arc tholeiite field, along with the gabbros from Salida. There are several lenses of porphyritic volcanics (67% SiO_2, 1457$\pm$30 m.y., M. E. Bickford) which intrude this sequence. The field work supports models of shallow water, limy shale-sandstone sedimentation in a tensional, possibly back-arc spreading or rifting environment.