Geology of the Random Island map area (NTS 2C/04)

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Detailed 1:50,000 mapping was completed over the Random Island map area (NTS 2C/04) during the 2011 field season. This is the first systematic regional mapping in this area since Jenness mapped the Terra Nova and Bonavista areas at 1:250,000 scale in 1963. The geology of the Random Island map area spans the Late Neoproterozoic to Early Ordovician and provides a broad range of lithologies, including sedimentary, volcanic and plutonic rocks.

View looking east over Smith Sound. One of three glacially carved fiords cutting east-west through the map area.

Neoproterozoic Sedimentary Rocks

Volcaniclastics of the upper part of the Connecting Point Group, Crow Cliff Point, Northwest Arm, Random Island.

Chalcocite and malachite mineralization in the Blue Point horizon, Crown Hill Fm., west of Little Heart's Ease.

The sedimentary rocks of the Random Island map area can be broken down into four distinct lithological and chronological units. The oldest sedimentary rocks include the Neoproterozoic deep-marine Connecting Point Group which occupies a large swath of land running north-south through the central part of the map area. This fault-bounded package generally consists of fine-grained sedimentary rocks but also has a volcaniclastic component which may provide geochronological data crucial in making direct comparisons with similar rocks of the Conception Group to the east. Stratigraphically above the Connecting Point Group is the Musgravetown Group which contains shallow-marine to terrestrial sedimentary rocks separated by a thin volcanic unit. The Musgravetown Group in this map area also contains the prospective copper- bearing horizons mapped to the northeast in the Trinity and Bonavista map areas.

Cambrian and Younger Sedimentary Rocks

Disconformably overlying the Musgravetown Group is the Adeytown Group. The Adeyton Group represents a marine transgression into the Cambrian with shallow-marine quartz arenites of the Random Formation, overlain by slates and siltstones interbedded with thin limestone beds. The Adeyton Group outcrops in an elongate basin, trending north-northeast in the center of the map area. The youngest sedimentary rocks in the map area, excluding glacial overburden, is the tribobite-bearing Harcourt Group. The Harcourt Group is exposed in a fault block in the northwest part of the map area, but due to the friable nature of these rocks, provides limited outcrop away from the coastline.

Synaeresis cracks dominate the fine grain rocks of the Random Formation.

Kink-folded base of the Random Fm., overlying the Crown Hill Fm., west of St. Jones Within. Note geologists for scale in lower left corner.

Septarian concretion eroded from the Elliott's Cove Fm., east of Elliott's Cove.

Hydrocephalus hicksii (Salter, 1869) in the Manuels River Fm., west of Fosters Point.

Paradoxides davidis (Salter, 1869) located as float, west of Britannia.

Clarella venusta (Billings, 1872) from the Manuels River Fm., west of Fosters Point.

Volcanic Rocks

Volcanic rocks of the Love Cove Group are found along the western boundary of the map area forming a southward-thickening wedge from two to five kilometres thick. A thin localized unit of ignibrites and brecciated volcanic rocks are found in the eastern part of the map area between the Rocky Harbour and Crown Hill Formations of the Musgravetown Group.

Porphyritic volcanic rocks of the Love Cove Group.

Brecciated volcanic rocks separating the Rocky Harbour and Crown Hill Formations in the eastern part of the map area.

Ignimbrite located west of Burgoyne's Cove.

Plutonic Rocks

The Love Cove Group volcanic rocks have been intruded by the Swift Current and Clarenville granitic plutons. The Swift Current Granite is an orange-pink, medium-grained granite containing minor biotite and rare fluorite. This unit outcrops in the southwestern part of the map area as a thin body connected to a larger pluton to the south. The Clarenville Granite is a small pluton found around the community of Clarenville, separating the Love Cove Group volcanics to the west from the sedimentary rocks of the Connecting Point, Adeyton and Harcourt groups'.

Vein hosted fluorite crystals within the Swift Current Granite, northwest of North West Brook.

Southern boundary of the Clarenville Granite. TCH road-cut south of Bluff Point, Northwest Arm.