



LEGEND

- POSTGLACIAL**
 - 15 MACKENZIE BASALT: Columnar, quartz pebbles, diatom, locally with granitic content; northwesterly trending dikes (warms) may include part of Unit 13
 - 14 Mica-gabbro, -diabase; dikes trending northwesterly; age uncertain
 - 13 Mica-gabbro, -diabase, -quartz gabbro; northwesterly to north-northwesterly trending dikes, sills and intrusions along outer ring fractures near Rusty and Theloyne Lakes may include part of Unit 13; age uncertain
 - REGAN INTRUSIVE SUITE**
 - 12 Rhyolite-hornblende granodiorite, medium to coarse grained; pyrophylic
 - 11 Rhyolite-hornblende diorite, -quartz diorite, -quartz monzonite; minor granite 11a - plagioclase bearing pyroxene hornblende
 - 10 Mixed unit including granitic, gneiss, diorite, quartz diorite and biotite schist; may consist part of Unit 1
 - YELLOWKNIFE SUPERGROUP**
 - BACK RIVER GROUP**
 - 9 Carbonate impregnated grits, breccias, minor opols, bedded carbonates and tuffs; some carbonates that have impregnated breccias and shear zones in volcanic rocks
 - 8 Mafic porphyry of basaltic composition; massive, porphyritic and ophitic textured dykes, sills, minor pillow lava
 - 7 Volcanic breccia, conglomerate; massive, unsorted, non-layered debris flow, lapilli and tuff deposits
 - 7a - polytuff, rhyolite, dacite and andesite black breccias
 - 6 Rhyolite, massive, flow layered, brecciated; various porphyritic (quartz, feldspar), white, buff and pale grey weathering rocks; minor tuff; includes rocks of dacite composition, dikes, flows, sills and rhyolite, rhyolite composite dome complexes include massive quartz phryic rhyolite, quartz-feldspar rhyolite, dacite and associated breccias, conglomerate and volcanoclastic breccias commonly impregnated with carbonate
 - 5 Volcanoclastic rocks, quartz-plagioclase phryic tuffs, lapilli tuffs, and minor levels of felsic andesite to dacite composition; may consist part of Unit 4
 - 4 Felsic tuffs, breccias, massive units dominantly of dacite composition; grey, white, buff and pale green weathering rocks; containing sparse phenocrysts of quartz and feldspar; may contain part of Unit 3 and rocks of rhyolite composition; volcanic dikes, lava and associated air-fall and ash-flow tuffs; minor conglomerate
 - 3 Andesitic lavas, breccias and volcanoclastic rocks; minor conglomerates
 - 3a - breccia and pillow lava, minor hydroclastic
 - 3b - massive plagioclase phryic lavas, locally columnar jointed
 - 3c - buff, crystalline, felsic and coarse-grained tuff and tuffite, ash-flow tuff; rhyolite, volcanic minor polymorphic breccia and conglomerate containing andesite and dacite clasts
 - 3d - buff and plagioclase phryic tuff; may contain dacite
 - 3e - bedded plagioclase, plagioclase-hornblende-phryic volcanoclastic tuff, water-lain tuff; minor massive andesite, shale and conglomerate
 - 2 Basalt, pillow and massive lava
 - BECHEVY LAKE GROUP**
 - 1a Greenish-mudstone turbidites, siltstone, grit, minor conglomerate, graphic shale, buffaceous sandstones and tuffaceous phylloids and dacite boulder conglomerate and other low deposited facies; dacite dome complexes
 - 1b Iron formation, oxide (iron-jasper-ochreous), silicate (amphibole) and sulfide (pyrite, pyrrhotite) and carbonate facies
- These sediments range in metamorphic grade from lower greenschist facies along the eastern and northern sides of the volcanic complex, increasing to amphibolite facies bearing staurolite, cordierite and andalusite near Jim Magrum Lake
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- Compiled by: M.B. Lambert (1981)
- Any revisions or additional information known to the user would be welcomed by the compiler.

- Major drift covered area
 - Esker
 - Geological boundary (defined, approximate, assumed)
 - Bedding, top known (inclined, vertical, overturned)
 - Bedding, top unknown (inclined, vertical)
 - Joint (inclined, vertical)
 - Schistosity, slaty cleavage, cleat orientation (tectonic)
 - Breccias and conglomerates
 - Clinal strations, grooves
 - Lineation, line or pillow lava, columnar joint
 - Artificial direction of plough
 - Syncline (direction of plunge)
 - Minor fold, "N", "S", or "C" form (arrow indicates plunge)
 - Structural trend
 - Fault (defined, approximate, assumed)
 - Shear zone
 - Golan
 - Age in millions of years (arabic)
 - Breccia (impregnated with carbonate)
 - Pillow lava
 - Rocks impregnated with carbonate
 - Outline locality
- Elevations in metres above mean sea-level

Structural Note

Large portions of the volcanic complex are preserved in an upright position. South of Rouben Lake circular features, 10 to 20 m across, are interpreted as remnants of a large cauldron subsidence structure exposed in plan view. They include near and outer ring-fracture volcanics expressed by long lines of intense shearing and fracturing, arcuate valleys that follow these fractures along the northern and western sides of the system and the concentric arrangement of units. The ring fractures are the focus of elongate to equant felsic dikes and intrusions (unit of Unit 1).

Sediments and volcanics outside the circular features are folded variably. Deformation is greatest around the margins of the volcanics and decreases toward the inner ring structures. A dominant north-northwesterly trending fold pattern in the sedimentary rocks is the major structural feature in the volcanic complex. In general the volcanic rocks are not as intensely deformed as the surrounding sedimentary rocks, which are folded into small-scale folds. For example, west of Rouben Lake and northeast of Rouben Lake the basal contact of the volcanics indicates gentle folding, whereas the volcanics are folded into steeply dipping folds. Open warps whose axial traces and foliations trend northwesterly are superimposed on these northwesterly trending folds.

Most structural measurements on bedding are in sedimentary units as many of the volcanic units are massive or poorly bedded. Hence, the dominance of movement to steep attitudes in the margins reflects the differential slip in the volcanics. In general the volcanic rocks are not as intensely deformed as the surrounding sedimentary rocks, which are folded into small-scale folds. For example, west of Rouben Lake and northeast of Rouben Lake the basal contact of the volcanics indicates gentle folding, whereas the volcanics are folded into steeply dipping folds. Open warps whose axial traces and foliations trend northwesterly are superimposed on these northwesterly trending folds.

Except for on the east-southeast side of the complex discrete folds are rarely documented within the ring-fracture systems. Between the outer and inner ring fractures near Rusty Lake steep dips of layered rocks and an orthogonal pattern of foliations that trend northeast and northwest, except the main deformation. These foliations are also prominent in the southeastern margin of the complex. Within the inner ring-fracture zone no folding is documented and pervasive foliations, common in the folded rocks, are absent. Deformation here is mainly by block faulting and the massive volcanic succession may be essentially flat lying or tilted.

Newly circular, steep ring-fracture systems, ring-fracture intrusions and the corresponding concentric arrangement of units in the southern half of the area along with absence of porphyritic rocks and coarse breccia (interpreted as lapillites and debris flows) lead to the conclusion that the southern half of the volcanic terrace is a relatively complete massive dome complex and the main of deformation the least competent sedimentary rocks and layered volcanics deformed around the more competent massive dome complex and the mass of volcanics preserved within the cauldron subsidence structure.

References

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