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The Tertiary volcanic Masset Formation, Queen Charlotte Islands

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The Masset Formation is composed of intercalated, mafic to felsic lava flows and pyroclastics. Chemically, the volcanic rocks are subalkaline and span a compositional range of basalt to rhyolite. The phenocryst assemblage is limited to feldspar, with minor pyroxene, magnetite and rarely quartz in the most felsic rocks. Many of the rocks are aphyric and all are aphanitic. Felsic vent areas appear to have been localized in a belt parallel to and just inland of the west coast. These areas are often altered and potentially associated with epithermal mineralization. Mafic flows may have originated from fissure eruptions coincident with this trend. The eruptions climaxed from 20 to 25 Ma (based on K-Ar dating) with contemporaneous extrusion of both felsic and mafic magmas; mafic magmas are volumetrically dominant and travelled further from vent areas.

The Masset Formation rest with angular unconformity on Mesozoic strata. The formation is cut by steeply dipping normal faults, otherwise there is little evidence of internal deformation or structural complexity. Along the eastern margin of Masset exposures the normal faults trend north and dip east.

Dominantly mafic lavas, with minor intercalated felsic pyroclastic flows, underlie eastern Graham Island and interdigitate with sediments of the Skonun Formation. Mafic lavas found in offshore drill holes in Queen Charlotte Sound and Hecate Strait are lithologically distinct from Masset rocks on Graham Island in that they contain hornblende and biotite phenocrysts. These volcanics may be coeval with Late Cretaceous volcanic rocks found within the Honna Formation on Graham Island.

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