

## ECONOMIC GEOLOGY OF WEST NEWFOUNDLAND

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West Newfoundland is defined, for the purpose of this report, as that part of Newfoundland that is west of the Cabot fault. Much of the area formed part of a Lower Paleozoic continental terrace wedge marginal to the Proto-Atlantic ocean. The continental margin and the Proto-Atlantic ocean were destroyed during the Taconic orogeny. The area was later deformed during the Acadian orogeny, the last stages of which produced block faulting that continued intermittently into Carboniferous times. A complex of marine and nonmarine Carboniferous rocks were deposited in the resultant fault-bound basins.

The Precambrian basement of west Newfoundland crops out in the northern Long Range and in the Indian Head range. It is characterized by high grade granulites, gneisses, granites and anorthosites. Its economic potential is considered low at the present time.

Locally the Grenville is cut by mafic dykes that feed basalt flows in the north of the area. The flows immediately underlie Lower Cambrian deposits. This mafic activity is thought to have taken place during the initiation of the Proto-Atlantic ocean. If this is so, mineralization associated with rifted margins elsewhere might be found in these rocks.

The overlying Lower and Middle Cambrian rocks comprise a transgressive series of arkoses, quartzites, shales and limestones. The shales often show up to 13%  $K_2O$  and form a potential source of agricultural potash.

From Middle Cambrian to Middle Ordovician times a carbonate bank covered west Newfoundland. Base metal mineralization has been reported from low in the bank sequence but is mostly concentrated at a disconformity of latest Canadian age between the St. George and Table Head formations. Pale coloured sphalerite is the predominant ore mineral.

Minor veins of sphalerite, galena, fluorite and chalcocopyrite cut limestones of the Table Head Formation north of St. Anthony.

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A complex of clastic rocks and ophiolites have been thrust into the upper parts of the Table Head Formation. These rocks are of Cambro-Ordovician age but formed to the east of the Cabot fault and represent former continental rise sediments and oceanic lithosphere. Petroleum and minor chalcopyrite are the only shows in the sediments but chalcopyrite, asbestos, chromite and gold are known from the ophiolites and associated rocks.

During Siluro-Devonian times the eastern margin of west Newfoundland was invaded by granitic rocks. These are presently exposed at a very high level and are associated with intrusive and extrusive rhyolite. Hydrothermal alteration is common in the country rocks and traces of chalcopyrite are widely dispersed. The area seems favourable for porphyry copper type mineralization.

During Carboniferous times a great thickness of predominantly clastic rocks formed in two fault bounded basins. No volcanic rocks have yet been recognized. The southwestern Codroy-Bay St. George Basin was formed in late Devonian times and was infilled first by marine sediments derived from the south. Later, detritus was locally derived and deposited in a marine to fluviatile environment and forms the Anguille Group. The overlying Codroy and Barachois Groups represent a locally derived, mixed marine and nonmarine, molasse sequence.

The northeastern Deer Lake-White Bay basin consists of a lower, narrow rift controlled sequence of rocks that range from axial turbidites to marginal conglomerates. These rocks are separated by a marked unconformity from the overlying Deer Lake Group, which comprises a sequence of fluviatile and alluvial fan deposits with local marine inclusions.

Barite and chalcopyrite mineralization occurs in the Codroy-Bay St. George area within the Ship Cove Limestone, which can be probably correlated with the Windsor Group limestones of Nova Scotia. The Snakes Bight Formation contains copper-zinc mineralization at Cape Anguille. The potential of the area seems high.