MARGINAL NOTES

The maps are meant to be used together, so for ease of comparison, the legends are identical – the same unit has the same number on both maps. For each unit, the corresponding designation on the Open File 1:50000 (Barr et al., 1987) and 1:100000 (Barr et al., 1988) maps of the Cape Breton Highlands are given in brackets.

1. Undivided schists, gneisses, and foliated plutonic rocks (H_{Ugn}). Includes strongly retrograded gneisses and sheared granitoid rocks of unknown affinity. Restricted to the southwestern part of MAP 2. Intruded by the Cambrian Cheticamp Pluton.

2. Quartz diorite (H_{diU}). Dioritic rocks of variable composition, locally including hornblendite. Variably altered, ranges from weakly to strongly foliated. Associated with unit 1 in the western part of MAP 2; intruded by the Cheticamp Pluton.

3. Cheticamp Pluton (C_{gdCP}). Granodiorite to monzogranite, ranging from hornblende-bearing in the north to biotite-muscovite-bearing in the south (Barr et al., 1986). Strongly sheared in the vicinity of the Cheticamp River and north (MAP 1); largely undeformed in its southern part except for faults (MAP 2). (550 ± 8 Ma, U-Pb zircon, Jamieson et al., 1986; 525 ± 40 Ma Rb-Sr whole rock, Barr et al., 1986).

4. Pleasant Bay Gneiss Complex (OSgnPB). Largely tonalitic to granodioritic orthogneiss, containing enclaves of older or coeval amphibolite, and minor pelitic and quartzo-feldspathic schists. Includes:

   4a. Undifferentiated quartzo-feldspathic gneisses and amphibolites with foliated granitoid rocks, all of unknown age.

   4b. Belle Cote Road orthogneiss (OS_{ogBC}). Granodioritic to tonalitic syntectonic orthogneiss with amphibolite interlayers. Forms a north-trending belt in the northeastern part of MAP 2; its extent north of the Cheticamp River is largely unknown owing to poor exposure. (433 ± 20 Ma, U-Pb zircon, Jamieson et al., 1986).

   4c. MacKenzies Mountain megacrystic orthogneiss (OS_{moPB}). Granodioritic orthogneiss occurring mainly in the Pleasant Bay area of MAP 1; small areas of megacrystic gneiss in the Bell Cote Road orthogneiss (not distinguished on map) may be equivalent).

5. Jumping Brook metamorphic suite (OS_{JB}). Interlayered sedimentary and mafic to felsic volcanic rocks, strongly defirmed deformed with metamorphic grade ranging from greenschist to upper amphibolite facies. Associated with Fe-Cu-Pb-Zn-As sulphides in Faribault Brook area (MAP 2). Lower parts may be as old as Ordovician; Silurian age for felsic volcanics inferred from dates on rhyolite dyke (Currie et al., 1982) and correlative units in the southern Cape Breton Highlands (Barr et al., 1988). Faulted against the Cheticamp Pluton. Includes:

   5a. Faribault Brook metavolcanics (OS_{JBa}). Mafic tholeiitic metabasaltic rocks forming the lower part of the sequence between Turner Brook and the Cheticamp River (MAP 2) and in the vicinity of Presqu' Isle (southwestern part of MAP 1). Possible relict pillow structures preserved on Faribault Brook.

   5b. Barren Brook schist (OS_{JBb}). Silicic volcanic and volcanogenis sedimentary rocks, locally with prominent blue "quartz eyes", quartzites, and tuffs. Boulder conglomerate at the base of this unit near Rocky Brook (MAP 2) contains large granite and diorite boulders, including detritus possibly from the CHeticamp Pluton. Unit thins northward and north of the Cheticamp River occurs only as very thin interlayers with 5a and 5c (not distinguished on MAP 1).

   5c. Dauphinee Brook schist (OS_{JBc}). Interlayered semi-pelitic, pelitic, and psammitic metasedimentary rocks, probably originally turbidites, extending from the Faribault Brook (MAP 2) area to Jumping Brook (MAP 1). Contains thin carbonate horizons on Corney Brook. Intensely deformed and transposed in the vicinity of the Cheticamp River, where it is interlayered with 5a and 5b in what is probably a complexly deformed, originally stratigraphic transition from volcanic to sedimentary rocks.

   5d. Corney Brook schist (OS_{JBd}). Semi-pelitic to pelitic schist with minor marble and quartzite, containing coarse staurolite, garnet and biotite porphyroblasts, with kyanite at the highest grades. Gradational into, and probably the higher grade equivalent of, 5c. Forms north-trending belt in central part of both map areas, and also occurs as fault-bounded slivers in the central Highlands east of the area shown in MAP 2.

   5e. Fishing Cove River schist. Semi-pelitic to pelitic garnet-kyanite schist and gneiss, restricted to central and northern area of MAP 1. Gradational into 5d, and locally cut by and/or interlayered with orthogneiss of the Pleasant Bay complex. Contains syntectonic pegmatite bands. (390-380 Ma $^{40}Ar/^{39}Ar$ hornblende and biotite cooling ages, Plint, 1987; 390-375 Ma Rb-Sr muscovite ages, Jamieson et al., 1986).

6. George Brook amphibolite (OS_{JBe}). Coarse-grained amphibolite that intrudes, but has been deformed with, the Jumping Brook metamorphic suite. Included with Jumping Brook metamorphic suite by Barr et al. (1987), but separated by Plint (1987), because of locally cross-cutting contacts. Locally contains relict dioritic textures; presumably represents small metamorphosed gabbro to diorite intrusions. Post-dates Silurian deposition of Jumping Brook metamorphic suite, although it may be in part coeval; pre-dates Devonian cooling and uplift of these rocks.

7. Taylors Barren pluton (SD_{grTB}). Granodiorite to monzogranite, ranging from aplitic to megacrystic, with a characteristic augen texture where sheared. Forms a north-south trending, strongly sheared, locally mylonitic, belt in the central Highlands east of the Northeast Margaree Fault Zone. Restricted to small fault-bounded slivers on the eastern edge of MAP 2. (419 ± 17 Ma, Rb-Sr whole rock, Gaudette et al., 1985).

8. Foliated muscovite granitoid (HD_{grU}). Small body of foliated muscovite granite cropping out on the Cabot Trail south of Jumping Brook. Age and possible affinities to other granitoid rocks of the area unknown.

9. Biotite granidiorite, tonalite, monzogranite (CD_{grPB}). Restricted to northern part of MAP 1; equivalent to Pleasant Bay granite (364 ± 35 Ma, Rb-Sr whole rock, Cormier, 1972).

10. Margaree pluton (DC_{mgMP}). Coarse-grained to megacrystic biotite-hornblende monzogranite. Forms elongated north-south trending plkuton on the eastern margin of both map areas. Intrudes adjacent metamorphic rocks; not penetratively deformed, but cut by major zones of cataclasite at the northern end of the Northeast Margaree Fault Zone. (343 ± 17 Ma, Rb-Sr whole rock; 380 ma $^{40}Ar/^{39}Ar$ biotite cooling age, O'Beirne-Ryan et al., 1986; latter age preferred – Rb-Sr date probably reflects alteration).

11. Salmon Pool pluton (DC_{grSP}). Fine- to medium-grained syenogranite intruding Jumping Brook metamorphic suite bounded on its western margin; intrusion breccia with fragments of metabasite and diabase developed along its eastern margin. Interpreted to be sub-volcanic to Fisset Brook Formation. (365 ± 10/-5 Ma, U-Pb zircon, Jamieson et al., 1986).

12. Fisset Brook Formation (DC_F). Basalt and rhyolite interlayered with siltstone, shale, and local conglomerate. Forms two north-south trending belts east and west of the Cheticamp Pluton. Unconformably overlies the Cheticamp Pluton near Pembroke Lake (MAP 2); faulted against Jumping Brook metamorphic suite. Eastern belt contains Upper Devonian plant and fish fossils; western belt contains Tournaisian spores (Blanchard et al., 1984).

13. Undifferentiated Carboniferous sedimentary rocks (C). Not mapped in any detail, but range from unconformable on to faulted against older rocks. Unmetamorphosed, but intensely folded and faulted along the western margin of the Highlands; locally overthrust by older rocks.

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Contribution to Canada-Nova Scotia Mineral Development Agreement 1984-89, a subsidiary agreement under the Economic and Regional Development Agreement. Project funded by the Geological Survey of Canada.

Contribution à l'Entente auxiliaire Canada/Nouvelle-Écosse sur l'exploitation minérale 1984-89 faisant partie de l'Entente de développement économique et régional. Ce projet a été financé par la Commission géologique du Canada.

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FIGURE 2

GEOLOGY OF THE JUMPING BROOK METAMORPHIC SUITE AND ASSOCIATED ROCKS NORTH OF THE CHETICAMP RIVER CAPE BRETON ISLAND, NOVA SCOTIA

Geology by

R.A. Jamieson, P.C. Tallman, H.E. Plint and K.A. Connors

SHEET 2 OF 2

Canada

STRUCTURAL CROSS-SECTION

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