Ministero dell'Istruzione dell'Università e della Ricerca
Programma Nazionale di Ricerche in Antartide (P.N.R.A.)

Museo Nazionale dell'Antartide
Sezione di Scienze della Terra - Siena (Italy)

GEOPETROGRAPHIC MAP OF THE TERRA NOVA INTRUSIVE COMPLEX
(Victoria Land, Antarctica)

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Topographic data by M. Frezzotti et al. (2000) "Northern Foothills and Inexpressible Island Area"

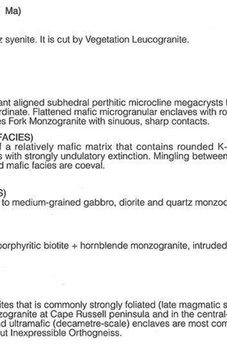
SCALE 1:50,000

Statute Miles 0 1 2 3 4

Kilometers 0 1 2 3 4 5 6

Nautical Miles 0 1 2 3

LOCATION DIAGRAM



LEGEND

interpreted / observed — Rendering of the units in the map

Moraine

WESTERN ROSS SUPERGROUP

McMURDO VOLCANIC GROUP

MELBOURNE VOLCANIC PROVINCE

Ml — Small monogenetic scoria cones of Quaternary age.

MEANDER INTRUSIVE GROUP

Md — Thin dykes (≈1 m) of alkali basalt composition of Cenozoic age reported as a bold line with thickness exaggeration. Dykes crosscut the other units and are sometimes affected by metre-scale fault offsets.

GRANITE HARBOUR INTRUSIVES

TERRA NOVA INTRUSIVE COMPLEX

VEGETATION UNIT (475±5 Ma)

Vf — **VEGETATION LEUCOGRANITE (FELSIC FACIES)**
Leucogranite with equigranular, medium- to fine-grained anhedral texture with dominant microcline, scarce biotite, relatively common igneous muscovite and garnet, scattered tourmaline and green micas pseudomorphs after cordierite. One to10 m thick sills and dykes that crosscut Inexpressible Syenite, Abbott Granite, Confusion Tonalite, Russell Gabbro, and Inexpressible Orthogneiss.

Vi — **VEGETATION MELAMONZOGRANITE (HYBRID FACIES)**
Gray to whitish matrix, with hornblende+biotite clots (cm to mm scale). Isolated small dykes and sills or boundary zones between the felsic and mafic facies, close to pillows of diorite into leucogranite.

Vm — **VEGETATION MONZODIORITE (MAFIC FACIES)**
Fine grained quartz monzodiorites with ubiquitous hornblende (scattered clinopyroxene relics) and biotite. Sills and dykes of 1-10 metre thickness that crosscut Abbott Granite, Fork Monzogranite, Confusion Tonalite, Russell Gabbro, and Inexpressible Orthogneiss.

INEXPRESSIBLE SYENITE (495±3 Ma)

Is — Amphibole+biotite quartz monzonite to quartz syenite. It is cut by Vegetation Leucogranite.

ABBOTT UNIT (495±4 Ma)

Af — **ABBOTT GRANITE (FELSIC FACIES)**
Biotite+hornblende syenogranite with abundant aligned subhedral perthitic microcline megacrysts that define a strong subvertical magmatic foliation; anhedral quartz is abundant and subhedral plagioclase is subordinate. Flattened mafic microgranular enclaves with rounded K-feldspar xenomegacrysts are common. Abbot Granite is the dominant facies of the Abbot Unit and intrudes Fork Monzogranite with sinuous, sharp contacts.

Ai — **ABBOTT MELAMONZOGRANITE (HYBRID FACIES)**
Heterogeneous hybrid facies consisting of a relatively mafic matrix that contains rounded K-feldspar (xeno)megacrysts, with ocellar quartz coronae, skeletal hornblende+biotite, and large quartz crystals with strongly undulatory extinction. Mingling between the felsic facies and mafic facies resulting in formation of the hybrid bodies, indicates that Abbot felsic, hybrid and mafic facies are coeval.

Am — **ABBOTT GABBRO-DIORITE (MAFIC FACIES)**
Large mass and minor tabular bodies of fine- to medium-grained gabbro, diorite and quartz monzodiorite within the main granite body.

Fm — **FORK MONZOGRANITE**
Moderately foliated, equigranular to slightly porphyritic biotite + hornblende monzogranite, intruded along sinuous sharp contacts by the Abbott Granite.

CONFUSION UNIT (c. 513-526 Ma)

Ct — **CONFUSION TONALITE**
Mainly equigranular biotite+hornblende tonalites that is commonly strongly foliated (late magmatic stage with local sub-solidus deformation). Subordinate medium to fine grained slightly K-feldspar-megacrystic monzogranite at Cape Russell peninsula and in the central-western Inexpressible Island. Mafic enclaves are strongly elongated parallel to the main tonalite foliation. Mafic and ultramafic (decametre-scale) enclaves are most common in the tonalite at Cape Russell peninsula. Deformed pegmatites are locally observed. The confusion tonalite cut Inexpressible Orthogneiss.

Rg — **RUSSELL GABBRO**
Equigranular gabbros and diorites with high Colour Index (50-70), commonly associated with the Confusion Tonalite.

TERRA NOVA ORTHOGNEISSES (c. 517-531 Ma)

Go — **GERLACHE ORTHOGNEISS (Go)**
Strongly deformed to gneissic, biotite + amphibole quartz diorites and biotite tonalites that are locally garnet-bearing. They form conformable decametre-scale lenses in the Wilson Metamorphic Complex at Gerlache Inlet.

Io — **INEXPRESSIBLE ORTHOGNEISS (Io)**
K-feldspar megacrystic biotite+hornblende granitoid with augen gneissic texture including fine-grained conformable metre-scale bodies of orthopyroxene+clinopyroxene+hornblende+biotite quartz monzodiorite.

WILSON METAMORPHIC COMPLEX

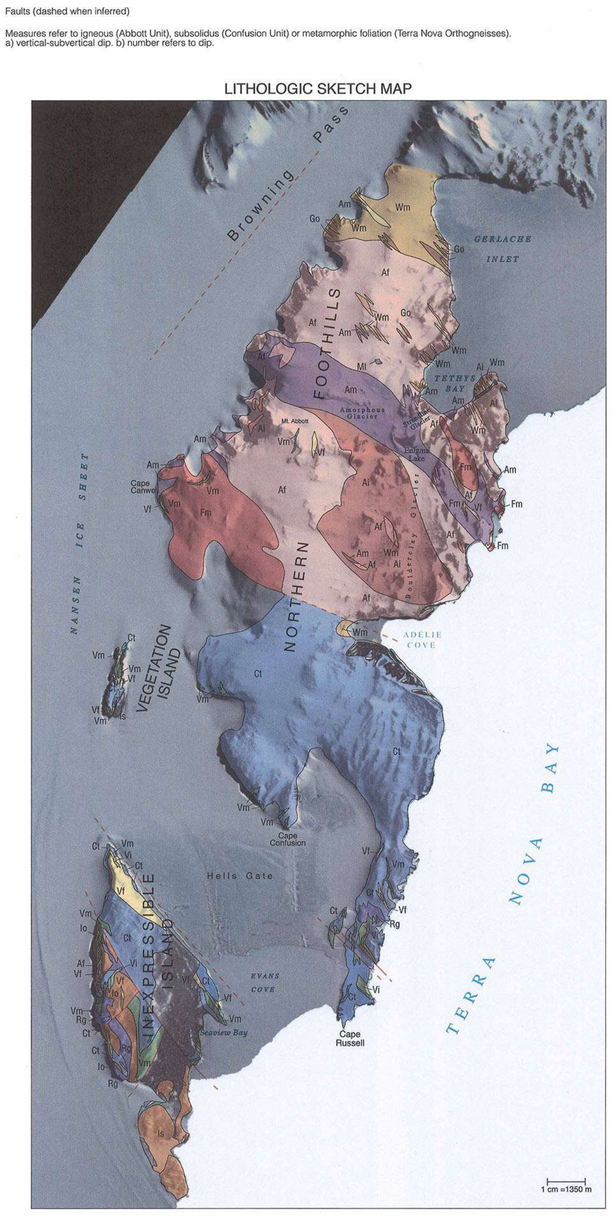
Wm — Upper amphibolite facies metamorphic rocks that form basement to the Terra Nova Intrusive Complex.

SYMBOLS

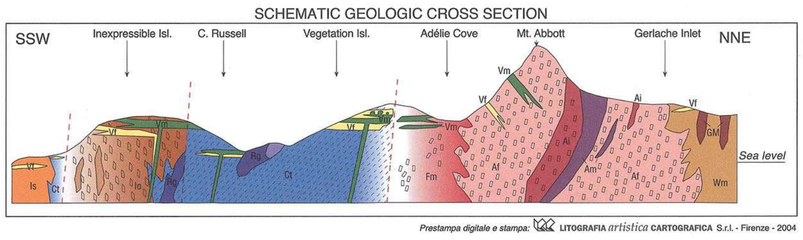
Faults (dashed when inferred)

Measures refer to igneous (Abbott Unit), subsolidus (Confusion Unit) or metamorphic foliation (Terra Nova Orthogneisses).
a) vertical-subvertical dip. b) number refers to dip.

LITHOLOGIC SKETCH MAP



SCHEMATIC GEOLOGIC CROSS SECTION



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