

DESCRIPTIVE NOTES

This open file geological map presents results of bedrock mapping undertaken in the region during 1986 and 1987 field seasons and includes geochronological data. The objectives of the mapping were to upgrade the reconnaissance database, and to address some of the outstanding structural, metamorphic, and metallogenic problems in the region, thereby providing a framework for regional correlation and tectonic synthesis of rock units of this part of the Churchill Structural Province. Detailed accounts of bedrock geology and structure covering the region were published in GSC Current Research reports. The reader is referred to the references listed here for a comprehensive overview of the geology and structure of this region. The data for this 1:250 000 scale coloured map were compiled digitally using FIELDLOG (Brodaric and Fyon, 1989) and AutoCAD with final output generated through direct collaboration with the Cartography Unit, GSC using GIS software.

PREVIOUS GEOLOGICAL MAPPING

The Chesterfield Inlet map area represents a portion of an Archean and Early Proterozoic granite-greenstone terrane within the Churchill Structural Province of the Canadian Shield. The map area was previously mapped by Bell (1985, 1987), Lord (1950), Weeks (1952), and Wright (1967), the latter at a scale of one inch to eight miles. The results of more recent regional bedrock mapping in the map area and in the surrounding region were reported by Armbrage et al. (1980), Hayward (1970), LeCheminant et al. (1987a,b), Reinhardt et al. (1980), Sanborn-Barrie (1987), and Tella et al. (1988, 1989, 1990, 1992, 1993). Previous structural, stratigraphic, thermobarometric, and petrographic studies outlined several crustal-scale ductile, high-strain zones that separate and expose different levels of crust (Tella et al. 1990). Tectonic juxtaposition of some of these crustal segments is believed to have occurred in the Early Proterozoic prior to emplacement of 1.85 Ga fluorite granites. The highlights of structural work were summarized previously (see transect A-B, Figures 1.2 in Tella et al. 1992).

REGIONAL GEOLOGY, STRUCTURE AND METAMORPHISM

The Archean and/or Early Proterozoic lithologies in the Chesterfield Inlet region are dominated by polydeformed mafic gabbros and quartz-feldspar gneiss (Agm), layered quartzofeldspathic gneiss (Agn), pelitic gneiss and and regionally metamorphosed gabbro (Agn), and gabbro (Agn). The migmatite (As), granitoid plutons (Ag, Aqp, Aqg), with subordinate amphibolite (Am) and gabbro (Agn). The migmatite (As), granitoid plutons (Ag, Aqp, Aqg), with subordinate amphibolite (Am) and gabbro (Agn). The migmatite (As), granitoid plutons (Ag, Aqp, Aqg), with subordinate amphibolite (Am) and gabbro (Agn). The migmatite (As), granitoid plutons (Ag, Aqp, Aqg), with subordinate amphibolite (Am) and gabbro (Agn).

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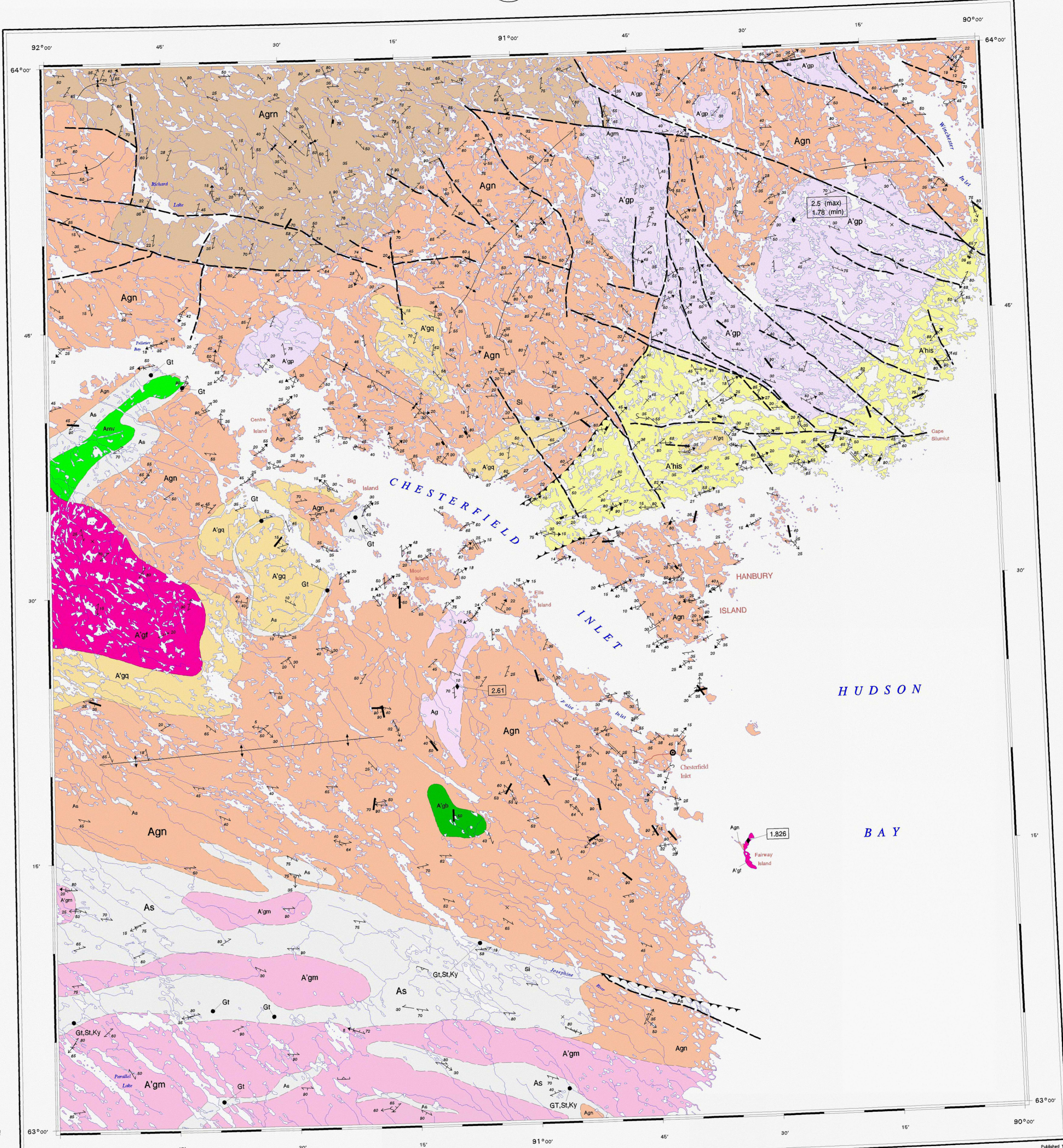
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LEGEND

PROTEROZOIC

- A'g^m Gabbro dykes (Mackenzie swarm); not shown on the map
- A'bⁱ Biotite lamprophyre dykes (not shown on the map)
- A'g['] Granite, massive to weakly cleaved, pink, equigranular porphyritic; in part fault-bearing, and contains orthopyroxene xenocrysts on Fairway Island
- A'gq Quartz dike to granitic pluton; massive to weakly foliated centres, and well foliated migmatitic margin
- A'gm Biotite-muscovite leucogranite, in part contains xenocrystic garnet; intrudes layered gabbro and pegmatite (units Agn and Ag)
- A'gb Gabbro; massive to weakly foliated, coarse grained by phic locally out pegmatite dykes
- A'gp Granite - magnetite bearing, porphyritic, mylonitized margins

ARCHEAN AND/OR EARLY PROTEROZOIC

- A'his Migmatite: fine-grained, biotite gabbro, paragneiss, gabbro, anorthosite, gabbro pyroxenite, and granitoid
- Ag Megacrystic (K-feldspar) granite; coarse grained, well foliated
- A'mv Amphibolite; minor metabasaltic rocks, and garnet-biotite schist
- As Garnet + biotite +/- staurolite +/- kyanite +/- sillimanite +/- muscovite paragneiss; metamorphosed quartz-magnetite banded iron formation, amphibolite; contain small metabasite intrusions, and migmatite gneiss
- Agn Layered to banded hornblende-biotite (grey) orthogneiss, migmatite quartz-biotite schist; includes minor proportions of metamorphosed iron formation, garnet + biotite +/- sillimanite paragneiss, and leucocratic granitoid (locally northeast of Hanbury Island); contains xenocrysts of metabasaltic rocks (garnet amphibolite, pyroxenite), in part and walls of megacrystic coarse gabbro; cut by pegmatite, in part lamprophyre and diabase dykes, and quartz syenite plugs

HAMBURY ISLAND SHEAR ZONE (HISZ)

- A'his Migmatite: fine-grained, biotite gabbro, paragneiss, gabbro, anorthosite, gabbro pyroxenite, and granitoid

ARCHEAN

- Ag Megacrystic (K-feldspar) granite; coarse grained, well foliated
- A'mv Amphibolite; minor metabasaltic rocks, and garnet-biotite schist
- As Garnet + biotite +/- staurolite +/- kyanite +/- sillimanite +/- muscovite paragneiss; metamorphosed quartz-magnetite banded iron formation, amphibolite; contain small metabasite intrusions, and migmatite gneiss
- Agn Layered to banded hornblende-biotite (grey) orthogneiss, migmatite quartz-biotite schist; includes minor proportions of metamorphosed iron formation, garnet + biotite +/- sillimanite paragneiss, and leucocratic granitoid (locally northeast of Hanbury Island); contains xenocrysts of metabasaltic rocks (garnet amphibolite, pyroxenite), in part and walls of megacrystic coarse gabbro; cut by pegmatite, in part lamprophyre and diabase dykes, and quartz syenite plugs

Ag

Megacrystic (K-feldspar) granite; coarse grained, well foliated

A'mv

Amphibolite; minor metabasaltic rocks, and garnet-biotite schist

As

Garnet + biotite +/- staurolite +/- kyanite +/- sillimanite +/- muscovite paragneiss; metamorphosed quartz-magnetite banded iron formation, amphibolite; contain small metabasite intrusions, and migmatite gneiss

Agn

Layered to banded hornblende-biotite (grey) orthogneiss, migmatite quartz-biotite schist; includes minor proportions of metamorphosed iron formation, garnet + biotite +/- sillimanite paragneiss, and leucocratic granitoid (locally northeast of Hanbury Island); contains xenocrysts of metabasaltic rocks (garnet amphibolite, pyroxenite), in part and walls of megacrystic coarse gabbro; cut by pegmatite, in part lamprophyre and diabase dykes, and quartz syenite plugs

A'gm

Granulite suite (granitoid to mafic composition), in part includes minor proportions of layered anorthosite and gabbro; intruded by several generations of gabbro, lamprophyre, and granite

NOTE: Relative ages of units for the most part are uncertain and no chronological order is implied.

Rock outcrop: ----- X

Lithological boundary (approximate): ----

Regional foliation (approximation, 1st 2nd): ---

Regional foliation (approximation, 1st 2nd): ---

Axial Plane (FP): ---

Intersection Lineation: ---

Mineral stretching Lineation: ---

Fold Axis (F2, F3): ---

Fold style (A-fold, S-fold, Z-fold): ---

Fault: ---

Thrust fault (approximate): ---

Minor Fault (sense unknown): ---

Shear Zone (sense unknown, dextral, sinistral): ---

Joint, Vein and Dike (pegmatite): ---

Trace of axial plane (uniform, synform): ---

Slip on Shale: ---

Zircon age (Ga): ---

Mineral occurrence: ---

MINERAL OCCURRENCES

Ky: Kyanite porphyroblasts in As

St: Staurolite porphyroblasts in As

Sil: Sillimanite porphyroblasts in As

Gr: Garnet porphyroblasts in As

Geology by S. Tella 1986-87, Geological Survey of Canada

Digital map compilation by S. Tella, Geological Survey of Canada

Digital cartography by R.L. Allard, Geological Survey of Canada

Any revisions or additional information known to the user would be welcomed by the Geological Survey of Canada

Digital base map assembled and modified by the Geological Survey of Canada from digital bases compiled by the Survey, Mapping and Remote Sensing Branch

Copies of the topographical edition of this map area may be obtained from the Canada Map Office, Department of Energy, Mines and Resources, Ottawa, Ontario, K1A 0G8

Mean magnetic declination 1993, 11° 32' West, increasing 2.8° annually. Readings vary from 12° 24' W in the SE corner to 9° 54' W in the NW corner of the map

The proximity of the North Magnetic Pole causes the magnetic compass to errata in this area

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