

DESCRIPTIVE NOTES

MAP-AREA 46 O/6 IS UNDERLAIN CHIEFLY BY ROCKS OF THE PENNYN GROUP WITH ONLIES OF THE BASEMENT COMPLEX EXPOSED ONLY IN THE CORE OF A LARGE FOLD IN THE NORTH-CENTRAL PART OF THE AREA. THIS ONLIES IS A HOMOGENEOUS, HEAVILY FOLIATED LEUCOCRATIC BIOTITE GRANODIORITE (Agpa).

The Pennyyn Group is believed to lie unconformably on the basement complex but the relationships are not often seen. In this area the basal sequence includes rusty garnet-biotite paragneiss (Anp) and minor amphibolite (Anm).

BIOTITE-FELDSPAR QUARTZITE (Apn) APPEARS TO OVERLIE OTHER UNITS IN THIS AREA. A THIN MARBLE AND CALCIUM-SILICATE GNEISS UNIT OCCURS BETWEEN THIS AND SUBJACENT UNITS IN PLACES BUT INTERLAYING OF UNITS ANP AND APN IS COMMON.

Numerous plutons and dykes of granite intrude the basement complex and the Pennyyn Group. Zonoliths of marble and biotite paragneiss are plentifully only the largest are shown on the map.

The hierarchy of folded structures has been studied in detail in an area of excellent exposure and distinctive marker beds in the southeast part of the area. Early isoclinal folds (D1) have axial surfaces (S1) striking northeast, dipping southeast and fold axes (L1) plunging down-dip.

Elsewhere in the area, D2 structures may be represented by attenuated infolds within and bordering the basement complex in the central and west-central parts of the area. These are illustrated near the middle of the cross-section.

Metamorphism of the Pennyyn Group produced two lithologic suites. Most of the group is in the uppermost amphibolite-garnet in paragneiss and in marble, diorite-feldspar-quartzite and scapolite and a hornite group mineral.

The third and fourth phases (D3 and D4) produced prominent meso- and megascopic folds that impose an east-northeast structural grain in the Foxe Fold Belt.

North to northeasterly trending broad transverse flexures (D5) alter the plunges of pre-existing folds. Few mesoscopic structures associated with this phase were observed.

Massive and foliated plutonic rocks (Ap) chiefly of hornblende and biotite granodiorite quartz monzonite and granite intrude the basement complex and the Pennyyn Group.

Available results of radiometric analyses indicate formation of the basement complex prior to 2500 Ma with some events occurring possibly as long as 3000 Ma ago.

Deformation of the basement and the Pennyyn Group may have taken place 2134 Ma ago (Jackson and Taylor, 1977) and again during the Hudsonian Orogeny (c.1624-1700 Ma ago).

High angle fault (defined, approximate); arrows indicate apparent relative movement.

Low angle fault (defined, approximate); teeth in direction of dip.

Antiform (defined, approximate) upright; recumbent or overturned.

Synform (defined, approximate) upright; recumbent or overturned.

A high degree of uncertainty or interpretation in the position or the nature of the symbol used is indicated.

Position of ends of cross-section.

Metamorphic minerals: A andalusite, C cordierite, G garnet, P phlogopite, Sc scapolite, T tremolite, Ac actinolite, Ch chlorite, M muscovite, S sillimanite, St staurolite.

Structural note: Description of structures is facilitated by separation into six phases using criteria such as fold style and orientation and sequential relationships among folds.

Cross-sections portray the inferred form of structures and show apparent dips (in the section) of lithologic contacts and foliation.

Structures appearing on cross-sections are highly interpretative. Some features, particularly faults, will often not appear on the map as they were not observed in the field.

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GENERAL GEOLOGY

The Foxe Fold Belt extends in an east-northeast direction from southern Melville Peninsula to central Baffin Island. It is composed of granitoid gneissic rocks of Archaean age (2500 Ma and older) overlain by meta-sedimentary rocks of Early Proterozoic age (approximately 2500 to 1700 Ma) of the Pennyyn and Pillsbury Groups.

The Archaean rocks form a basement complex predominantly of quartzite gneiss (Agpa) and foliated granitic rocks (Ag) with relatively minor amounts of amphibolite and paragneiss (An) and other meta-sedimentary rocks (Anq, Anb).

The Pennyyn Group consists of paragneiss (Anp, Anq) and marble (Am) with some quartz-biotite psammite (Anp, Anq, Anb) and calcium-silicate gneiss (Anp) and minor quartzite (Anq).

Metamorphism of the Pennyyn Group produced two lithologic suites. Most of the group is in the uppermost amphibolite-garnet in paragneiss and in marble, diorite-feldspar-quartzite and scapolite and a hornite group mineral.

Elsewhere in the area, D2 structures may be represented by attenuated infolds within and bordering the basement complex in the central and west-central parts of the area. These are illustrated near the middle of the cross-section.

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LEGEND

LATE(?) PROTEROZOIC HARBURYAN: Hd Brown weathering, dark green to black, fine to medium grained pyroxene diabase.

INTRUSIVE CONTACT: Ag Orange and buff weathering, white to tan and grey, massive and foliated, medium to coarse grained, biotite and hornblende granodiorite, quartzite and hornblende granodiorite, quartz monzonite and granite.

INTRUSIVE CONTACT: Ang Monzonite composed of units Anp and Anq in lit-par-lit, xenolithic and texturally transitional varieties. Includes xenoliths of older units.

EARLY PROTEROZOIC APHEBIAN PENNYN GROUP: Apva White and light green weathering, light grey, massive, layered aphanitic siliceous rock (acid volcanic rock?).

Apvb Green to dark green actinolitic greenstone (basic to intermediate volcanic rock).

Apvc Grey, fine to medium grained, thin to thick bedded, quartz-biotite-feldspar psammite, some with andalusite (?) porphyroblasts-muscovite schist, meta-gneiss.

Apvd Black, fissile, very fine grained, "sooty" pelite.

Apve Grey, fine to medium grained, thin to thick bedded, quartz-biotite-feldspar psammite and meta-schist, some with andalusite and rarely cordierite, gradational contacts with unit Apn in some areas.

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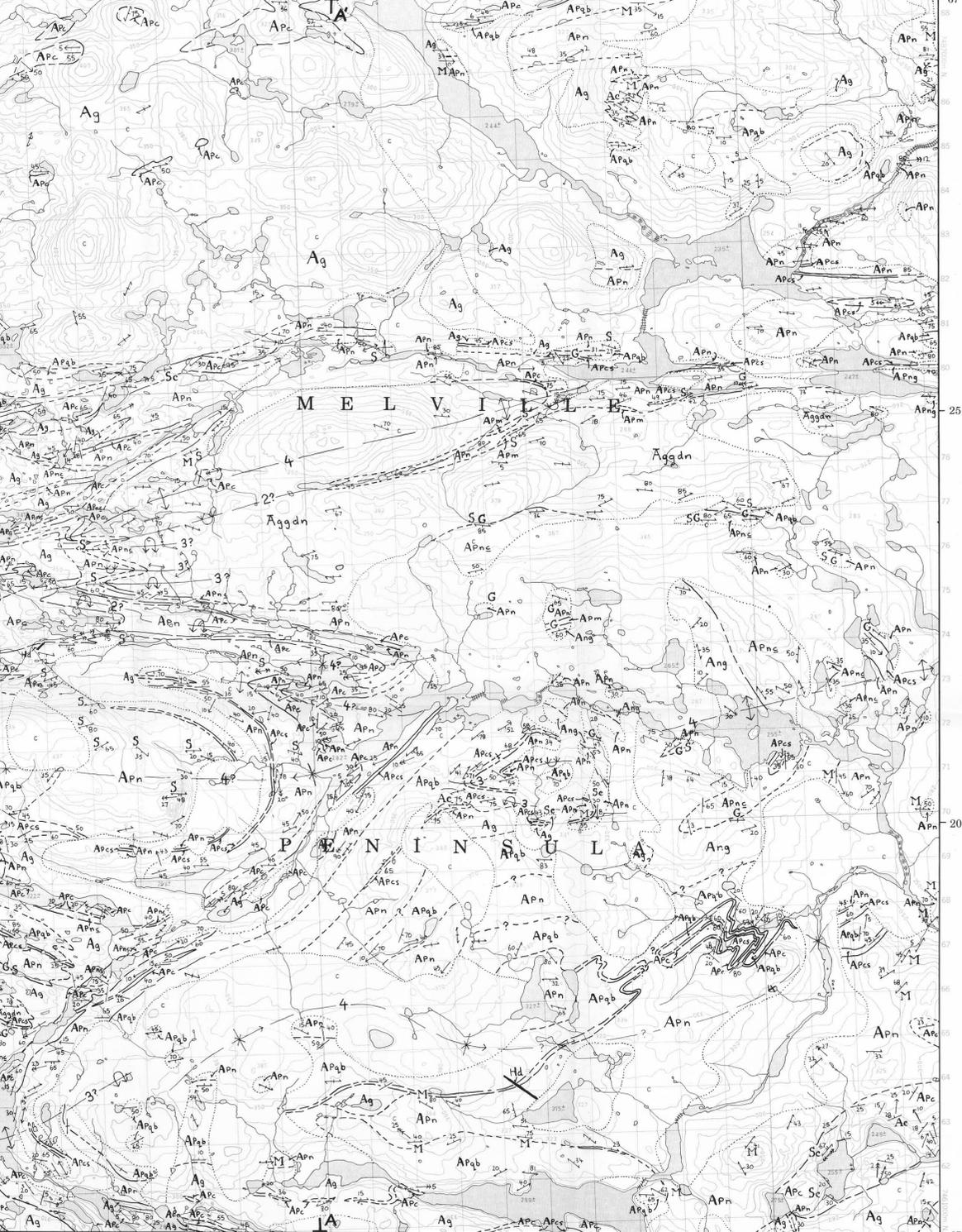
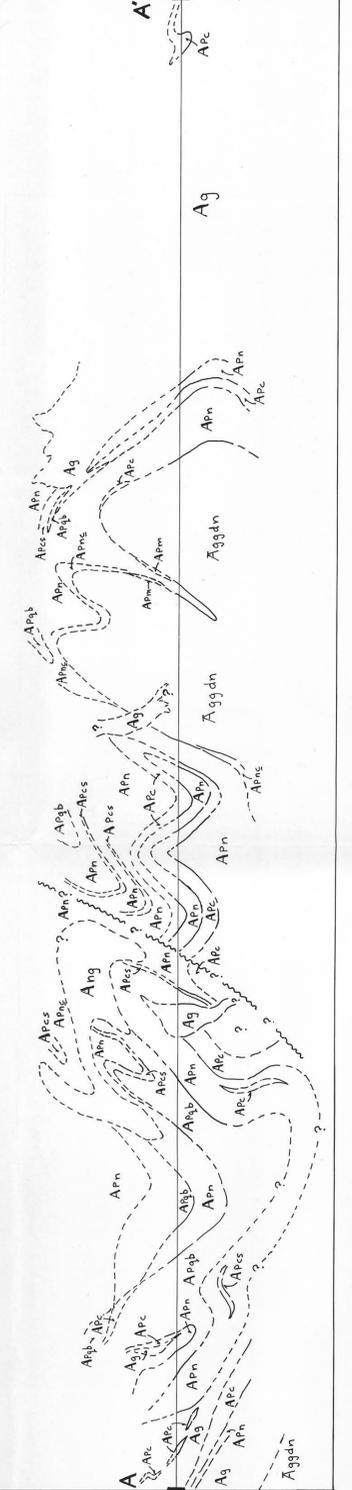
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LEGEND - LÉGENDE: ROADS AND RELATED FEATURES, LANDMARK FEATURES, BOUNDARIES AND SURVEY CONTROL, RELIEF FEATURES, PHOTOGRAPHY, etc. Includes a scale bar and coordinate information.