THE LOWER PART OF THE PENRHYN GROUP APPEARS TO BE ABSENT FROM THIS AREA. THE BASAL SEQUENCE OF ORTHOQUARTZITE AND SILLIMANITE PARAGNEISS COMMON IN ADJACENT MAP-AREAS WAS NOT OBSERVED, NOR WAS THE OVERLYING UNIT OF MARBLE. SUCH A LACK MAY BE THE RESULT OF LOCALIZED HEAT FLOW THAT MOBILIZED THE BASEMENT COMPLEX SO IT FLOWED INTO HIGHER STRATIGRAPHIC LEVELS, QUARTZO-FELDSPATHIC, BIOTITE-GARNET PARAGNEISS (APn) WITH LARGE PORPHYROBLASTS OF FELDSPAR MANTLES THE BASEMENT COMPLEX AND IN MOST PLACES HAS BEEN INTRUDED AND DISRUPTED BY NUMEROUS PLUTONIC MASSES (Ag), RECRYSTALLIZED AND POSSIBLY PARTIALLY MELTED. THE MANTLING PARAGNEISS IS OVERLAIN BY A THICK SUCCESSION OF MARBLE (AMPC) WITH MINOR CALCIUM-SILICATE GNEISS (AMPCS) EXTENSIVELY INTRUDED BY MANY PEGMATITE SILLS (Alg). ONLY SOME OF THE LARGER SILLS ARE SHOWN IN THE SOUTH THIS UNIT EXTENDS IN A BROAD BELT THAT DIPS GENTLY TO THE NORTH. A POSSIBLE REPETITION OF THIS UNIT IS FOUND IN SMALL SCATTERED OUTCROPS IN THE NORTH FORMING A SOUTHERLY-DIPPING BELT. THE MARBLE IS CREAM TO GREY-BLUE WEATHERING, WHITE, MEDIUM TO COARSE GRAINED AND COMMONLY CONTAINS GRAPHITE, DIOPSIDE AND QUARTZ. LOCALLY SCAPOLITE, EPIDOTE AND RARELY

THE MARBLE UNIT IS VARIOUSLY OVERLAIN BY BIOTITE PARAGNEISS (AMPN), BIOTITE QUARTZITE (Appd) AND QUARTZ-BIOTITE-MUSCOVITE SCHIST AND PSAMMITE (Appd). THE LATTER TWO UNITS ARE INTIMATELY INTERBEDDED AND ARE DISTINGUISHED ON THE MAP IN MOST PLACES BY INDICATING THE PRESENCE OF MUSCOVITE AND POSSIBLE ANDALUCITE IN THE UNIT LABELLED (ALPqb), INTERBEDS OF MARBLE ARE PLENTIFUL. THIN DISCONTINUOUS LAYERS OF APHANITIC, LIGHT GREY-GREEN META-VOLCANIC ROCKS, SOME APPARENTLY WITH RELICT AGGLOMERATIC TEXTURE, AND FINE GRAINED ROCKS POSSIBLY OF TUFFACEOUS ORIGIN (Apva) ARE ASSOCIATED WITH UNIT Apqb IN A ZONE EXTENDING FROM SOUTHWEST TO NORTHEAST ACROSS THE CENTRE OF THE AREA. THE QUARTZITE AND PSAMMITE ARE LIGHT TO DARK GREY, FINE TO MEDIUM GRAINED AND DISTINCTLY BEDDED. FOLIATION IS VISIBLE AS ALIGNED BIOTITE AND MUSCOVITE GRAINS AND ORIENTED BLEBS OF POSSIBLE PSEUDOMORPHS OF ANDALUCITE. THE PRESENCE OF WHITE MICA, QUARTZ AND ANDALUCITE CLEARLY INDICATE A LOWER METAMORPHIC GRADE THAN THAT IN SILLIMANITE AND POTASH FELDSPAR-BEARING ROCKS TO THE NORTH AND SOUTH.

THE RELATIONSHIP BETWEEN UNIT APQD AND THE SUBJACENT REMAINDER OF THE PENRHYN GROUP IS UNCERTAIN. UNCONFORMABLE RELATIONSHIPS ARE SUGGESTED BY THE DISPARITY BETWEEN INTENSITIES OF METAMORPHISM AND DEFORMATION AFFECTING THE TWO PARTS OF THE SUCCESSION. ZONES OF TRANSITION ARE RARELY SEEN AND ARE NARROW. NEAR THE LARGE RIVER IN THE SOUTHWEST UNIT AIPQD LIES ON UNITS AIP AND AIPC, SUGGESTING UNCONFORMABLE RELATIONS DESPITE ABSENCE OF NOTABLE ANGULAR DISCORDANCE. IN THE EAST-CENTRAL PART OF THE AREA GENTLY DIPPING BEDS OF UNIT APQD APPEAR TO LAP OVER STEEPLY DIPPING MARBLE UNITS FORMING THE NOSE OF A RECUMBENT NORTHERLY PLUNGING FOLD. AVAILABLE EVIDENCE INDICATES THAT UNIT APON WAS DEPOSITED ON PREVIOUSLY DEFORMED AND METAMORPHOSED ROCKS OF THE LOWER PART OF THE PENRHYN GROUP. HOWEVER, RAPID TRANSITIONS IN METAMORPHIC GRADE COULD BE CAUSED BY RESTRICTED ZONES OF HEAT FLOW ASSOCIATED WITH REGIONAL METAMORPHISM. REMOBILIZED BASEMENT GNEISS, "GRAN-ITIZED" PARAGNEISS AND MIGMATITE ALL TESTIFY TO THE EFFECTS OF SUCH A MECHANISM. AN APPARENT TRANSITION FROM MUSCOVITE-ANDALUCITE-BIOTITE PSAMMITE TO BIOTITE PARAGNEISS WAS OBSERVED NORTH OF THE BARROW RIVER NEAR THE EAST BORDER OF THE AREA AND IN MAP-AREA 46 0/8. THE HYPOTHESIS OF UNCONFORMABLE RELATIONSHIPS REMAINS TO BE SUBSTANTIATED.

PEGMATITE, GRANITE AND QUARTZ MONZONITE (Alg) INTRUDE ALL UNITS OF THE BASEMENT COMPLEX AND THE PENRHYN GROUP. GRANITIC ROCKS ARE MEDIUM TO COARSE GRAINED, MASSIVE AND FAINTLY FOLIATED, AND CONTAIN QUARTZ, POTASH AND PLAGIOCLASE FELDSPARS AND BIOTITE. THE INTIMATE RELATIONSHIPS BETWEEN PEGMATITE AND MARBLE, AND GRANITE AND PARAGNEISS DESCRIBED ABOVE SUGGEST GENERATION OF SOME IGNEOUS MATERIAL DURING REGIONAL HIGH GRADE METAMORPHISM CLOSELY FOLLOWED BY ITS MIGRATION OF SOME OF IT TO HIGHER STRUCTURAL LEVELS. ALTHOUGH SOME CLEARLY FORMED IN SITU, OTHER MASSIVE AND DISCORDANT BODIES ARE BELIEVED TO POST DATE METAMORPHISM AND DEFORMATION.

INSUFFICIENT OUTCROP AND EXTENSIVE AREAS OF MIGMATITE PREVENT DELINEATION OF MANY

MAJOR STRUCTURES. WHAT MAY BE AN EARLY (D2) FOLD WITHIN THE PENRHYN GROUP IS EXPOSED ALONG THE EASTERN MARGIN OF THE AREA_AND TO THE EAST IN MAP-AREA 46 0/8. THE NORTHERLY PLUNGE OF THIS LARGE ISOCLINAL, RECUMBENT FOLD IS TRANSVERSE TO ALL MACROSCOPIC STRUCTURES OF THE FOLD BELT. ITS FORM AND ATTITUDE SUGGEST THAT IT PRE-DATES EASTERLY AND NORTHEASTERLY TRENDING TIGHT TO OPEN D3 AND D4 FOLDS SEEN ELSEWHERE. TIGHT TO ISOCLINAL INTRAFOLIAL FOLDS AND PENETRATIVE FOLIATION (S2) SUBPARALLEL TO BEDDING (S0) ARE ADDITIONAL EVIDENCE OF D2. TIGHT UPRIGHT FOLDS WITH HORIZONTAL EAST-WEST AXES OUTLINED BY MARBLE BEDS IN THE NORTHWESTERN PART OF THE AREA SOUTH OF THE BARROW RIVER ARE ASSIGNED TO D3. THEY APPEAR TO DEFORM S2 AND SO AND MAY BE AFFECTED BY LARGE OPEN D4 FOLDS THAT EXTEND NORTHEAST ACROSS THE CENTRAL PART OF THE AREA. A NORTHEASTERLY TRENDING SYNFORM AFFECTING UNITS APRIL APRIL AND Alpqb IN THE SOUTHWEST MAY BE RELATED TO D4 FOLDING OR TO LATER (D5) TRANSVERSE WARPING. IN THIS SAME REGION, WEST-NORTHWEST TRENDING FAULTS, SOME WITH SMALL RIGHT LATERAL APPARENT DISPLACEMENTS, FORMED DURING De .

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 Penrhyn and Piling Groups. These have undergone polyphase deformation AND METAMORPHISM MOSTLY DURING THE HUDSONIAN OROGENY. GENERATION AND EMPLACEMENT OF PLUTONIC ROCKS PRECEDED, ACCOMPANIED AND FOLLOWED DEFORMATION. DIABASE DYKES OF PRESUMED LATE PROTEROZOIC

THE ARCHAEAN ROCKS FORM A BASEMENT COMPLEX PREDOMINANTLY OF GRANITOID GNEISS (Aggdn) AND FOLIATED GRANITIC ROCKS (Ag) WITH RELATIVELY MINOR AMOUNTS OF AMPHIBOLITE (Am) AND PARAGNEISS (An) AND OTHER META-SEDIMENTARY ROCKS (Aq.Anb). THE GNEISSIC AND PLUTONIC ROCKS ARE LARGELY OF QUARTZ MONZONITIC TO GRANODIORITIC COMPOSITION; LEUCOCRATIC AND MAFIC VARIETIES OF GNEISS ARE ALSO COMMON BUT DO NOT CONSTITUTE A LARGE VOLUME OF THE COMPLEX. GNEISSIC LAYERING AND MINERAL FOLIATION FORMED OF BIOTITE AND HORNBLENDE ARE UBIQUITOUS BUT NOT ALWAYS CLEARLY VISIBLE. PLUTONIC ROCKS EMPLACED DURING AT LEAST THREE EPISODES OF IGNEOUS ACTIVITY CAN BE DIFFERENTIATED LOCALLY BUT CANNOT EASILY BE MAPPED REGIONALLY BECAUSE THEY ARE COMPOSITIONALLY SIMILAR TO ONE ANOTHER AND TO THE GNEISS WHICH APPEARS TO BE BOTH HOST AND PARENT TO THEM. DEFORMED AMPHIBOLITIC BODIES, PRESUMED TO BE DYKES, ARE OFTEN OBSERVED WITHIN THE COMPLEX AND SOMETIMES AT THE CONTACT WITH THE PENRHYN GROUP. WITH FEW EXCEPTIONS THEY HAVE NOT BEEN OBSERVED WITHIN THE GROUP AND ARE PRESUMED TO PRE-DATE IT. META-SEDIMENTARY AND META-VOLCANIC ROCKS NOT DEMONSTRABLY PART OF THE PENRHYN GROUP HAVE IN SOME PLACES BEEN ASSIGNED TO THE BASEMENT COMPLEX BUT THEIR AFFINITY IS UNCERTAIN GIVEN THE EVIDENT INTRICACIES OF STRATIGRAPHY AND STRUCTURE. SOME LITHOLOGIC SIMILARITY TO ROCKS OF THE PRINCE ALBERT GROUP IN NORTHERN MELVILLE PENINSULA EXISTS BUT SUCH CORRELATION IS TENUOUS AT BEST.

THE PENRHYN GROUP CONSISTS OF PARAGNEISS (APR APRC) AND MARBLE (APC) WITH SOME QUARTZ-BIOTITE PSAMMITE (APQDAPQM, APP) AND CALCIUM-SILICATE GNEISS (APCS) AND MINOR QUARTZITE (APQ), GARNET, BIOTITE AND SILLIMANITE SCHISTS (APnb), AND META-VOLCANIC ROCKS (APm,APvb,APva). COMPLETE UNDERSTANDING OF THE STRATIGRAPHIC SUCCESSION IS LACKING AS MOST UNITS ARE DISCONTINUOUS AND LENSOID AND THE POSSIBILITY OF THE EXISTENCE OF FACIES CHANGES, UNCONFORMITIES AND CRYPTIC EARLY STRUCTURES RENDERS ITS DELINEATION DIFFICULT. A GENERAL ORDER TO THE UNITS CAN BE INDICATED, NONETHELESS. A THIN (50-100 M) BASAL SEQUENCE INCLUDES ORTHOQUARTZITE, RUSTY SILLIMANITE SCHIST, A SUSPECTED META-REGOLITH AND MINOR AMPHIBOLITE, MARBLE AND QUARTZO-FELDSPATHIC GRIT. THIS SEQUENCE IS OVERLAIN BY A PREDOMINANTLY CALCAREOUS UNIT OF MARBLE, CALC-SILICATE GNEISS AND INTERBEDDED QUARTZ-BIOTITE-FELDSPAR PARAGNEISS. THE CALCAREOUS UNIT IS FOLLOWED BY A THICK UNIT OF PARAGNEISSIC ROCKS WITH A THIN BED OF SCHISTOSE PARAGNEISS AT ITS BASE, AND A UNIT OF MARBLE, CALCIUM-SILICATE GNEISS AND BIOTITE QUARTZITE. AT THE HIGHEST OBSERVED STRUCTURAL AND STRATIGRAPHIC LEVELS IS A UNIT OF QUARTZ-BIOTITE-MUSCOVITE PSAMMITE AND GREYWACKE. THE TOP OF THIS UNIT HAS NOT BEEN OBSERVED. THE RELATIONSHIP OF PRESENT TO ORIGINAL THICKNESS OF THE GROUP IS WELL DISGUISED BY THE RIVAL PROCESSES OF THINNING DURING DEFORMATION, REPETITION BY FOLDING AND DILATION BY SYNTECTONIC PLUTONISM.

THE PENRHYN GROUP APPEARS TO LIE UNCONFORMABLY ON THE BASEMENT COMPLEX. TECTONISM HAS OBLITERATED ANY ANGULAR DISCORDANCE AND UNCONFORMABLE RELATIONSHIPS ARE INFERRED BECAUSE OF THE CLEAR LITHOLOGIC CONTRAST AND THE COMMON PRESENCE OF THE THIN ORTHOQUARTZITE UNIT WITH RARE FELDSPATHIC GRIT BEDS LYING UPON A VARIETY OF ROCK TYPES IN THE COMPLEX. THE UPPERMOST UNIT OF THE PENRHYN GROUP MAY BE SEPARATED FROM THE REST OF THE GROUP BY AN UNCONFORMITY. CONTRASTS IN INTENSITY OF METAMORPHISM AND DEFORMATION AND UNEXPLAINED STRUCTURAL DISCORDANCE SUPPORT SUCH AN INTERPRETATION BUT RAPID TRANSITIONS OR FAULTING REMAIN VIABLE ALTERNATE EXPLANATIONS.

METAMORPHISM OF THE PENRHYN GROUP PRODUCED TWO LITHOLOGIC SUITES. MOST OF THE GROUP IS IN UPPERMOST AMPHIBOLITE FACIES AND CONTAINS THE ASSEMBLAGES GARNET-BIOTITE-SILLIMANITE AND CORDIERITE-SILLIMANITE-GARNET IN PARAGNEISS AND, IN MARBLE, DIOPSIDE-FORSTERITE-CALCITE AS WELL AS SCAPOLITE AND A HUMITE GROUP MINERAL. ROCKS OF THE UPPERMOST UNIT OF THE GROUP ARE IN GREENSCHIST FACIES AND CONTAIN CHLORITE-MUSCOVITE-QUARTZ IN PELITIC UNITS. PORPHYROBLASTS OF A MINERAL TENTATIVELY IDENTIFIED AS ANDALUCITE ARE COMMON IN META-PSAMMITIC UNITS AND TREMOLITE OCCURS SPORADICALLY IN CALCAREOUS ROCKS.

POLYPHASE STRUCTURES INDICATING NUMEROUS EPISODES OF DEFORMATION OF THE BASEMENT COMPLEX AND THE PENRHYN GROUP EXIST THROUGHOUT THE FOLD BELT BUT UNEQUIVOCAL SEQUENTIAL RELATIONSHIPS AMONG THEM ARE RARE. THE EARLIEST DEFORMATIONAL PHASE (D1) IS INFERRED TO HAVE AFFECTED THE BASEMENT COMPLEX PRIOR TO DEPOSITION OF THE PENRHYN GROUP. LITTLE IS KNOWN OF THIS PHASE. THE SECOND PHASE (D2), THE EARLIEST OBSERVED IN THE PENRHYN GROUP, IS BELIEVED TO HAVE FORMED ATTENUATED ISOCLINAL FOLDS AND UBIQUITOUS FOLIATION (S2). IN ALL BUT A FEW OUTCROPS S2 IS PARALLEL TO BEDDING (So). MEAGRE EVIDENCE SUGGESTS THAT THE TREND OF D2 STRUCTURES MAY HAVE BEEN NORTHERLY. THE EFFECTS OF D2 ON THE PENRHYN GROUP REMAIN PROBLEMATICAL, BUT MAY BE RESPONSIBLE FOR SOME OF THE OBSERVED DISCONTINUITY OF UNITS DESCRIBED ABOVE.

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. D3 FOLDS ARE TIGHT TO NEARLY ISOCLINAL AND USUALLY RECUMBENT. AXIAL PLANE FOLIATION (S3) IS NEARLY PARALLEL TO LIMBS (S0) AND HENCE TO S2 RENDERING SEPARATION OF PHASES D2 AND D3 VERY DIFFICULT. D4 FOLDS ARE COAXIAL, OR NEARLY SO, WITH D3 BUT ARE MORE OPEN AND GENERALLY UPRIGHT OR SLIGHTLY OVERTURNED. MESOSCOPIC D4 FOLDS CAN OFTEN BE OBSERVED TO HAVE DEFORMED EARLIER STRUCTURES. NORTH TO NORTHEASTERLY TRENDING BROAD TRANSVERSE FLEXURES (D5) ALTER THE PLUNGES OF

PRE-EXISTING FOLDS. FEW MESOSCOPIC STRUCTURES ASSOCIATED WITH THIS PHASE WERE OBSERVED. STEEPLY DIPPING FRACTURES AND FAULTS, MANY WITH NORTHERLY AND NORTHWESTERLY TRENDS ARE EVIDENCE OF THE LAST PHASE OF DEFORMATION (D6). MOST FAULT DISPLACEMENTS APPEAR TO BE LEFT-LATERAL AND EAST-

METAMORPHISM IS BELIEVED TO HAVE ACCOMPANIED ALL PHASES OF DEFORMATION EXCEPT D5 AND D6. IT POSSIBLY REACHED ITS ZENITH DURING D3 BUT MINERAL RECRYSTALLIZATION OUTLASTED MUCH OF THE PENETRATIVE DEFORMATION.

MASSIVE AND FOLIATED PLUTONIC ROCKS (Ag), CHIEFLY OF HORNBLENDE AND BIOTITE GRANDDIORITE QUARTZ MONZONITE AND GRANITE INTRUDE THE BASEMENT COMPLEX AND THE PENRHYN GROUP. RESEMBLING GRANITOID ROCKS OF THE COMPLEX, SEPARATION OF THESE IS BASED LARGELY ON FIELD RELATIONSHIPS. FOLIATED PLUTONIC ROCKS, EXCEPT WHERE OBSERVED TO HAVE INTRUDED THE PENRHYN GROUP, ARE ASSIGNED TO THE COMPLEX (Ag), WHERE INTRUSIVE INTO THE GROUP THEY (Ag) ARE CONSIDERED TO BE PRE- OR SYNTECTONIC WITH THE MAIN PHASES OF DEFORMATION. IN SOME LOCALITIES INTIMATE MIXING WITH AND PARTIAL MELTING OF PARAGNEISS HAS CREATED ROCK MAPPABLE ONLY AS MIGMATITE (Ang) ALTHOUGH LARGE SCREENS AND ZENOLITHS CAN BE DISTINGUISHED IN PLACES. COMMON LOCAL FORMATION OF PEGMATITE AND LEUCOCRATIC GRANITIC ROCK (Ag) IS BELIEVED COEVAL WITH DEFORMATION ALSO. MASSIVE, OFTEN CROSS-CUTTING PLUTONS (Ag) INVADED THE PENRHYN GROUP AFTER CESSATION OF DEFORMATION.

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 (R.K. WANLESS, PERSONAL COMMUNICATION, 1976). DEFORMATION OF THE BASEMENT AND THE PENRHYN GROUP MAY HAVE TAKEN PLACE 2134 Ma ago (Jackson and Taylor, 1972) and again during the Hudsonian Orogeny (circa 1700 Ma ago). POST-TECTONIC PLUTONS (1600 MA OLD; HEYWOOD, 1966) WERE EMPLACED INTO THE FOLD BELT LATE IN THE OROGENIC HISTORY. FOLLOWING EXTENSIVE UPLIFT AND EROSION, DIABASE DYKES (Hd) PRESUMED TO BE PART OF THE MACKENZIE DYKE SWARM OF CIRCA 1000 MA AGE (FAHRIG, 1970) CUT ROCKS OF THE FOLD BELT. THESE ARE SPATIALLY ASSOCIATED WITH FAULTS AND FRACTURES FORMED DURING D6 TECTONISM. SUBSEQUENT UPLIFT AND EROSION WAS FOLLOWED BY DEPOSITION OF ORDOVICIAN CARBONATE ROCKS, REMNANTS OF WHICH LIE NORTH AND SOUTH OF THE FOLD BELT.

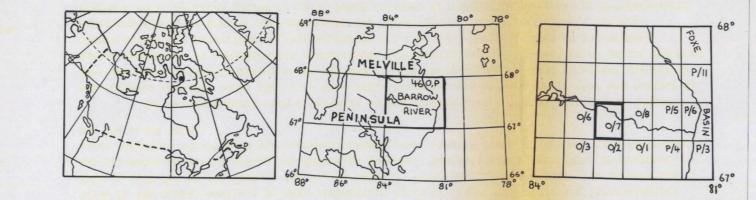
FAHRIG, W.F. 1970. DIABASE DYKE SWARMS: IN GEOLOGY AND ECONOMIC MINERALS OF CANADA, GEOLOGICAL SURVEY OF CANADA, ECONOMIC GEOLOGY REPORT NUMBER ONE, PP. 131 - 134.

HEYWOOD, W.W. 1967. GEOLOGICAL NOTES NORTHEASTERN DISTRICT OF KEEWATIN AND SOUTHERN MELVILLE PENINSULA, DISTRICT OF FRANKLIN, NORTHWEST TERRITORIES (PARTS OF 46, 47, 56, 57); GEOLOGICAL SURVEY OF CANADA, PAPER 66-40. JACKSON, G.D. AND TAYLOR, F.C. 1972. CORRELATION OF MAJOR APHEBIAN ROCK UNITS IN THE NORTHERN CANADIAN SHIELD; CANADIAN JOURNAL OF EARTH SCIENCES, VOLUME 9, PP. 1650 - 1669.

GEOLOGICAL MAPPING BY: T. Gordon, A. V. Okulitch CROSS-SECTIONS BY: A.V. Okulitch DESCRIPTIVE NOTES BY: A. V. Okulitch, T. Gordon

DRAUGHTING BY: A. V. Okulitch

NOTICE OF ANY REVISIONS OR ADDITIONAL GEOLOGICAL INFORMATION KNOWN TO USERS OF THESE MAPS WOULD BE GRATEFULLY RECEIVED BY THE AUTHORS.



LATE(?) PROTEROZOIC

BROWN WEATHERING, DARK GREEN TO BLACK, FINE TO MEDIUM GRAINED PYROXENE

INTRUSIVE CONTACT ORANGE AND BUFF WEATHERING, WHITE, TAN AND GREY, MASSIVE AND FOLIATED, MEDIUM TO COARSE GRAINED, BIOTITE AND HORNBLENDE GRANODIORITE, QUARTZ MONZONITE, GRANITE AND LEUCOCRATIC EQUIVALENTS. SOME PORPHYRITIC VARIETIES. PEGMATITE COMMONLY CONTAINING QUARTZ, FELDSPAR, MUSCOVITE AND BIOTITE; RARELY TOURMALINE. PRE-AND POST-TECTONIC PLUTONS ARE NOT IFFERENTIATED. INCLUDES ZENOLITHS OF OLDER UNITS. MIGMATITE COMPOSED OF UNITS APR AND Ag IN LIT-PAR-LIT, ZENOLITHIC AND TEXTURALLY TRANSITIONAL VARIATIONS. MINOR ZENOLITHS OF UNIT APC.

EARLY PROTEROZOIC APHEBIAN

APVO 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?).

INTRUSIVE CONTACT

GREY, FINE TO MEDIUM GRAINED, THIN TO THICK BEDDED, QUARTZ-MUSCOVITE-FELDSPAR PSAMMITE, SOME WITH ANDALUCITE (?) PORPHYROBLASTS; MUSCOVITE

APP BLACK, FISSILE, VERY FINE GRAINED, "SOOTY" PELITE. GREY, FINE TO MEDIUM GRAINED, THIN TO THICK BEDDED, QUARTZ-BIOTITE-FELDSPAR PSAMMITE AND META-GREYWACKE, SOME WITH GARNET AND RARELY CORDIERITE.

POSSIBLE UNCONFORMITY Brown, RUSTY AND TAN WEATHERING, BUFF AND GREY, FINE TO MEDIUM GRAINED, ARTZ-BIOTITE-FELDSPAR, QUARTZ-FELDSPAR-BIOTITE-GARNET-SILLIMANITE D QUARTZ-FELDSPAR-BIOTITE-GRAPHITE PARAGNEISS AND MINOR SCHIST

GRADATIONAL CONTACTS WITH UNIT APR IN SOME AREAS.

OR CORDIERITE-BEARING PARAGNEISS. INCLUDES SOME INTERBEDS OF UNITS APnb, APnc , APc AND APcs . REY AND GREY-GREEN, MEDIUM TO COARSE GRAINED THIN BEDDED, CALCIUM-SILICATE MEISS AND MARBLE-QUARTZITE WITH QUARTZ-CALCITE-PLAGIOCLASE-DIOPSIDE AND ACCESSORY SCAPOLITE, ACTINOLITE, GRAPHITE, EPIDOTE AND BIOTITE. COMMONLY INTERBEDDED WITH AND PASSING LATERALLY INTO UNIT APC.

MHITE, GREY AND GREY-BLUE, MEDIUM TO COARSE GRAINED, MASSIVE AND BEDDED
MARBLE WITH CALCITE-DIOPSIDE-MICROCLINE-QUARTZ AND MINOR DOLOMITE,
SCAPOLITE, PHLOGOPITE, GRAPHITE, A HUMITE GROUP MINERAL AND TREMOLITE.
INTERBEDDED WITH AND PASSING LATERALLY INTO UNIT APCS. INCLUDES SMALL
DECEMANTED OF UNIT ACLS URLOUTIONS. BEDS OF UNIT Apn. PEGMATITE OF UNIT Ag IS UBIQUITOUS. Aphb | Brown and Rusty Weathering, Schistose, Biotite-Garnet-Sillimanite paragneiss.

RUSTY, FINE TO MEDIUM GRAINED, GRAPHITIC PARAGNEISS WITH PYRITE AND A DARK GREEN, FINE TO MEDIUM GRAINED, MASSIVE AND FOLIATED AMPHIBOLITE;

WHITE TO GREY-BLUE, MEDIUM TO COARSE GRAINED, MASSIVE AND FAINTLY BEDDED, ORTHOQUARTZITE WITH MINOR FELDSPAR, WHITE MICA AND PHLOGOPITE. QUARTZO-FELDSPATHIC GRIT, GREY-GREEN DIOPSIDE-CHLORITE ROCK (META-REGOLITH ?). BIOTITE-GARNET-SILLIMANITE SCHIST AND AMPHIBOLITE.

PROBABLE UNCONFORMITY

ORANGE AND BUFF WEATHERING, GREY AND PINK, MEDIUM TO COARSE GRAINED Ag URANGE AND BUFF WEATHERING, GREY AND PINK, MEDIUM TO COARSE GROUND FOLIATED GRANDDIORITE, QUARTZ MONZONITE, GRANITE AND LEUCOCRA S; MINOR QUARTZ DIORITE, DIORITE AND SYENITE. INCLUDES ROCKS

ORANGE, GREY AND TAN, MEDIUM TO COARSE GRAINED, LAYERED AND FOLIATED,
BIOTITE AND HORNBLENDE GRANODIORITIC, QUARTZ MONZONITIC AND LEUCOCRATIC
GNEISS. INCLUDES ROCKS OF UNITS Ag, Ag, AND SMALL BODIES OF Am.

Am DARK GREEN FOLIATED AMPHIBOLITE, META-GABBRO AND HORNBLENDE-PLAGIOCLASE

DARK GREEN, COARSE GRAINED, SERPENTINIZED PYROXENE-BEARING ULTRAMAFIC ROCK. QUARTZ-BIOTITE-FELDSPAR PARAGNEISS, SOME WITH HORNBLENDE; MIGMATITE WITH

Anb RUSTY WEATHERING, SCHISTOSE BIOTITE PARAGNEISS, Aq WHITE, MEDIUM TO COARSE GRAINED, MASSIVE ORTHOQUARTZITE.

---- GEOLOGICAL BOUNDARY (DEFINED, APPROXIMATE) BOUNDARY OF AREAS EXTENSIVELY DRIFT-COVERED.

BEDDING AND COMPOSITIONAL LAYERING (HORIZONTAL, INCLINED, VERTICAL) FOLIATION, SCHISTOSITY, GNEISSIC LAYERING, CLEAVAGE AND AXIAL PLANES (HORIZONTAL, INCLINED, VERTICAL, DIP UNKNOWN); EARLIEST

FOLIATION, CLEAVAGE AND AXIAL PLANES (INCLINED, VERTICAL); ASSOCIATED WITH FOLDS OF LATER PHASES OBSERVED TO HAVE DEFORMED BEDDING OR ASSOCIATED WITH FOLDS OBSERVED TO HAVE DEFORMED BEDDING, EARLY FOLIATION AND/OR PRE-EXISTING STRUCTURES. CLEAVAGE AND AXIAL PLANES (INCLINED, VERTICAL); ASSOCIATED WITH GENTLE FOLDS OBSERVED TO HAVE DEFORMED EARLIER STRUCTURES AND BELIEVED TO HAVE FORMED LATE IN THE TECTONIC HISTORY, STRUCTURAL FORM LINE (ON CROSS-SECTIONS).

LINEAR STRUCTURES INEATION (PLUNGING, HORIZONTAL); FORMED BY BEDDING-FOLIATION NTERSECTION, MINERAL GROWTH, RODDING AND MULLION; EARLIEST OR ONLY INEATION (PLUNGING, HORIZONTAL); FORMED BY BEDDING-FOLIATION AND FOLIATION INTERSECTION, MINERAL GROWTH, RODDING AND ULLION AND FOLD AXES ASSOCIATED WITH FOLDS OBSERVED TO HAVE DEFORMED BEDDING OR EARLY FOLIATION. INEATION (PLUNGING, HORIZONTAL); FORMED BY BEDDING-FOLIATION AND FOLIATION INTERSECTION, MINERAL GROWTH AND FOLD AXES ASSOCIATED WITH FOLDS OBSERVED TO HAVE DEFORMED BEDDING, EARLY FOLIATION AND/OR PRE-EXISTING STRUCTURES. INEATION (PLUNGING, HORIZONTAL); FORMED BY CLEAVAGE-BEDDING AND LEAVAGE-FOLIATION INTERSECTION AND FOLD AXES ASSOCIATED WITH

GENTLE FOLDS BELIEVED TO HAVE FORMED LATE IN THE TECTONIC HIGH ANGLE FAULT (DEFINED, APPROXIMATE); ARROWS INDICATE APPARENT RELATIVE MOVEMENT LOW ANGLE FAULT (DEFINED, APPROXIMATE); TEETH IN DIRECTION OF DIP.

ANTIFORM (DEFINED, APPROXIMATE) RECUMBENT OR OVERTURNED POSTULATED AFFINITY WITH DEFORMATIONAL PHASE. SYNFORM (DEFINED, APPROXIMATE) RECUMBENT OR OVERTURNED

A HIGH DEGREE OF UNCERTAINTY OR INTERPRETATION IN THE POSITION OR THE NATURE OF THE SYMBOL USED IS INDICATED.

METAMORPHIC MINERAL A ANDALUCITE C CORDIERITE G GARNET P PHLOGOPITE SC SCAPOLITE T TREMOLITE AC ACTINOLITE Ch CHLORITE M MUSCOVITE S SILLIMANITE St STAUROLITE

DESCRIPTION OF STRUCTURES IS FACILITATED BY SEPARATION INTO SIX PHASES USING CRITERIA SUCH AS FOLD STYLE AND ORIENTATION AND SEQUENTIAL RELATIONSHIPS AMONG FOLDS, FOLIATION AND LINEATION. SUCH SEPARATION DOES NOT IMPLY PRESENCE OF DISCRETE EVENTS, PARTICULARLY IN THE CASE OF PHASES D2 , D3 AND D4 WHICH MAY WELL BE PARTLY OR WHOLLY SYNCHRONOUS IN SOME AREAS. NO BOUNDS ON THE TIME SPANS REPRESENTED BY THE PHASES ARE IMPLIED AS ONLY THE BROADEST LIMITATIONS CAN BE PLACED ON THE BEGINNINGS AND ENDS OSTULATED TO BE RESPONSIBLE FOR THEM. MESOSCOPIC STRUCTURES ARE ASSIGNED A POSITION IN THE TECTONIC HIERARCHY BASED ON INTERPRETATION OF LOCAL FIELD RELATIONSHIPS ONLY IN THE UNIT WITHIN WHICH THEY WERE OBSERVED. THIS POSITION CANNOT BE DIRECTLY RELATED TO DEFORMATIONAL PHASES WHICH FORMED THE LARGE FOLDS. FOR THESE PRELIMINARY MAPS, NO ATTEMPT HAS BEEN MADE TO INTEGRATE ALL MESOSCOPIC FEATURES INTO A MEGASCOPIC STRUCTURAL SYNTHESIS.

STRUCTURAL NOTE

CROSS-SECTIONS PORTRAY THE INFERRED FORM OF STRUCTURES AND SHOW APPARENT DIPS (IN THE SECTION) OF LITHOLOGIC CONTACTS AND FOLIATION. VERTICAL PROPORTIONS ARE NOT TO SCALE. THE HORIZONTAL REFERENCE LINE REPRESENTS AN APPROXIMATE MEAN ELEVATION ALONG THE LINE OF SECTION AND IS USUALLY WITHIN 200 M. OF SEA LEVEL. 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

CANADA EDITION 1 46-0/7 ROADS AND RELATED FEATURES HARD SURFACE, ALL WEATHER ... LOOSE SURFACE TRAIL, CUT LINE, PORTAGE BUILT-UP AREA RAILWAY, SIDING, STATION, STOP ... SEAPLANE BASE, ANCHORAGE ... LANDMARK FEATURES HOUSE, BARN ... CHURCH, SCHOOL . POST OFFICE HISTORICAL SITE ... TOWERS: FIRE, RADIO ... WELL: OIL, GAS TANK: OIL, GASOLINE, WATER . TELEPHONE LINE POWER TRANSMISSION LINE . CUTTING, EMBANKMENT . GRAVEL PIT BOUNDARIES AND SURVEY CONTROL FRONTIÈRES ET POINTS DE RÉFÉRENCES INTERNATIONAL, PROVINCIAL,
BOUNDARY MONUMENT COUNTY, DISTRICT TOWNSHIP, PARISH-SURVEYED .. TOWNSHIP, DLS - SURVEYED, UNSURVEYED MUNICIPALITY INDIAN RESERVE, PARK, ETC ... HORIZONTAL SURVEY POINT ... BENCH MARK WITH ELEVATION ... SPOT ELEVATION, PRECISE: LAND, WATER ... DRAINAGE AND RELATED FEATURES STREAM, SHORELINE: INDEFINITE ... DIRECTION OF FLOW LAKE, INTERMITTENT LAKE INUNDATED LAND ... MARSH, SWAMP (WOODED) ... DRY RIVER BED WITH CHANNELS .. SAND: ABOVE, IN WATER STRING BOG TUNDRA: PONDS, POLYGONS .. RAPIDS, FALLS, RAPIDS FORESHORE FLATS RELIEF FEATURES CONTOURS APPROXIMATE CONTOURS DEPRESSION CONTOUR SPOT ELEVATION, APPROXIMATE: LAND, WATER ... SAND, SAND DUNES PALSA BOG WOODED AREA .. CLEARED AREA .. REVISION 46-0/11 46-0/10 46-0/9 OPEN FILE DOSSIER PUBLIC PRODUCED BY SURVEYS AND MAPPING BRANCH, DEPARTMENT OF ENERGY, MINES AND RESOURCES, VITAWA, 1974. MARCH 1977 **ELEVATIONS IN METRES ABOVE MEAN SEA LEVEL** ÉLÉVATIONS EN MÈTRES AU-DESSUS DU NIVEAU MOYEN DE LA MER

ÉTABLIE PAR LA DIRECTION DES LEVÉS ET DE L'ENERGIE. DE CARTOGRAPHIE MINISTÈRE DE L'ENERGIE. DE DISTRICT OF FRANKLIN 437 Feet 100 50 0 100 200 300 400 500 600 700 800 900 1000 Pieds NORTHWEST TERRITORIES CONTOUR INTERVAL .. GEOLOGICAL SURVEY **ÉQUIDISTANCE DES COURBES** 10 MÈTRES COPIES MAY BE OBTAINED FROM THE CANADA MAP OFFICE DEPARTMENT OF ENERGY, MINES AND RESOURCES, OTTAW OR YOUR NEAREST MAP DEALER. NORTH AMERICAN DATUM 1927 Scale 1:50,000 Echelle Miles 1 0 1 2 3 TRANSVERSE MERCATOR PROJECTION © CANADA COPYRIGHTS RESERVED 1974 PROJECTION TRANSVERSE DE MERCATOR © CANADA 1974, TOUS DROITS RÉSERVÉS

refer to this map as: MAP 46-0/7 CARTE pour usage militaire: EDITION 1 MCE ÉDITION ROUTES ET OUVRAGES CONNEXES

CHEMIN DE FER, VOIE D'ÉVITEMENT, GARE, ARRÊT

... — — —

.. ----

LEGEND - LÉGENDE

SURFACE PAVÉE, TOUTES SAISONS ...

SENTIER, PERCÉE, PORTAGE

HYDROAÉROPORT, MOUILLAGE .

POINTS DE REPÈRE

AGGLOMÉRATION

PONT

MAISON, GRANGE ...

ÉGLISE, ÉCOLE

BUREAU DE POSTE ...

PUITS: PÉTROLE, GAZ

LIGNE TÉLÉPHONIQUE ...

DÉBLAI, REMBLAI ...

GRAVIÈRE

COMTÉ, DISTRICT

MUNICIPALITÉ ...

RÉSERVE INDIENNE, PARC, ETC .

COURS D'EAU, RIVE; IMPRÉCISE .

DIRECTION DU COURANT ..

MARAIS, MARÉCAGE (BOISÉ)

MARÉCAGE EN ENFILADE ...

COURBES DE NIVEAU .

COURBE DE CUVETTE

SABLE, DUNES ...

RÉVISION

SABLE: AU DESSUS, DANS L'EAU ...

TERRAIN INONDÉ ...

REPÈRE DE NIVELLEMENT AVEC COTE .

POINT COTÉ, PRÉCIS: SUR TERRE, SUR L'EAU

LIT DE COURS D'EAU TARI AVEC CHENAUX ..

TOUNDRA: ÉTANGS, SOLS POLYGONAUX.

COURBES DE NIVEAU APPROXIMATIVES .

POINT COTÉ, APPROXIMATIF: SUR TERRE, SUR L'EAU

99

REFERENCE POINT CHURCH — ÉGLISE (as above)
POINT DE REPÈRE CHURCH — ÉGLISE (ci-dessus

EASTING: Read number on grid line

Estimate tenths of a square from this line eastward to point:

LONGITUDE EST: Noter le chiffre de la ligne

du quadrillage immédiatement à gauche du repère:

Estimer le nombre de dixièmes du carré entre cette ligne et le repère en direction est

NORTHING: Read number on grid line

LATITUDE NORD: Noter le chiffre de la ligne

du quadrillage immédiatement en-dessous

Estimate tenths of a square from

GRID REFERENCE SAMPLE EXEMPLE DU QUADRILLAGE

Estimer le nombre de dixièmes du carré

entre cette ligne et le repère en direction nord:

Nearest similar grid reference 100,000 metres (about 63 mile

ONE THOUSAND METRE

UNIVERSAL TRANSVERSE MERCATOR GRID

QUADRILLAGE DE MILLE MÈTRES

UNIVERSEL TRANSVERSE DE MERCATOR

GRID NORTH is 1-37" (29 mils) WEST of TRUE NORTH for centre of map.

Le REPÈRE MAGNÉTIQUE en 1975 est à 42 18' (752 mils) OUEST du NORD DU QUADRILLAGE.

NORD DU QUADRILLAGE est 1 37' (29 mils) à l'ouest du NORD GÉOGRAPHIQUE au centre de la carte.

THE MAGNETIC COMPASS MAY BE ERRATIC IN THIS AREA

LA BOUSSOLE SERA PEUT-ÊTRI INSTABLE DANS CETTE RÉGION

CONVERSION SCALE FOR ELEVATIONS

ECHELLE DE CONVERSION DES ÉLÉVATIONS

50 100 150 200 250

VARIATION ANNUELLE DÉCROISSANTE 21.5°

ANNUAL CHANGE DECREASING 21.5

DRAINAGE ET OUVRAGES CONNEXES

REPÈRE PLANIMÉTRIQUE .

RÉSERVOIR: PÉTROLE, ESSENCE, EAU

TOWNSHIP, ATC-ARPENTÉE, NON ARPENTÉE

-COINS DE SECTION ...

LIGNE DE TRANSPORT D'ÉNERGIE ...

46-0/7 EDITION 1