92000 Note: Some map units and symbols shown in the legend may not appear on this map SURFICIAL DEPOSITS NOTES NONGLACIAL ENVIRONMENT ALLUVIAL DEPOSITS: stream-deposited material within modern active drainage systems; "modern" is defined as the period since retreat of the sea, proglacial lakes, or gla-Ac Alluvium: silt, sand, and gravel deposited in channels and on floodplains; may include alluvium in terraces formed as streams cut to present level in glacial and marine sedimentary fill. Deltaic sediments: sand, gravel, and boul-Ad ders deposited where modern streams enter lakes or Hudson Bay. NONGLACIAL AND GLACIAL ENVIRONMENT MARINE DEPOSITS: materials deposited in the Tyrrell Sea and glacial deposits modified by marine processes. Mp Coastal plain-tidal flat sediments: com-plex of poorly sorted stony silt and sand with pockets of sorted nearshore sand and Forms a flat plain extending as far as 20 km inland. A generally complete organic cover and a high density of shallow (less gravel, wind-blown sand, and marine clayey silt; probably a till plain levelled by filling of depressions and planation by than 3 m deep) lakes make determining the nature of the highly variable underlying sediments difficult. Periglacial features wave action during emergence. vary from mudboils on muddy substrate to frost cracks or polygons on organic, gravelly, or sandy deposits. Offlap sediments: thin sheet of sand Characterized on some airphotos by a deposited by a migrating shoreline; thought to be a lag developed by wave mottled pattern resulting from periglacial processes or gullying by streams reworking of marine clayey sand or silty sand; generally associated with Mp. Deltaic sediments: sand, pebbly sand, and gravel deposited in the Tyrrell Surfaces are characterized by sparse vegetation and polygonal frost cracks. Sea by glacial or nonglacial streams. Nearshore sediments: generally well sorted Surfaces are characterized by sparse Mn sand, gravel, cobbles, or boulders devegetation and orthogonal frost cracks. posited as beaches, bars, spits, and icepushed ridges. Offshore sediments: clay-silt and silty Difficult to differentiate from units Mq sand deposited in a deep water environ-Tp and Ts on airphotos. Surface vegement; may occur anywhere below marine limit but distribution is patchy above 60 m a.s.l.; thickest deposits generally tation is dominantly shrubs in turf circles around mudboils. Striped pattern (Ms) consists of dark and light are found in major river valleys or valleys with major eskers; Ms: prominent AR - Kelp Rk stripes, 10 to 20 m wide, running downslope and reflects vegetation differences. striped pattern on airphotos; Mm: mottled Mottled pattern (Mm) due to shrub- and pattern on airphotos. mudboil-covered mounds 5 to 10 m in diameter and less than 0.5 m high surrounded by lightcoloured grass-sedge vegetation; thought to have high ground-] Alluvium and marine sand or silt, undif-AM ferentiated: flat areas consisting of than 1 m of fibrous peat on which mosses, modern alluvium mixed with silt and sand sedges, and grasses grow. Maximum active that was washed from slopes by wave action layer 15 to 50 cm deep. Surface characor deposited in the sea by meltwater terized by frost polygons and thaw ponds streams. related to vertical ice wedges extending to a depth of 2 to 3 m. INLET Alluvium and outwash gravel, undifferen-Surface generally covered by 40 cm to more tiated: flat areas occurring in stream valleys or abandoned channels above than 1 m of fibrous peat on which mosses, sedges, and grasses grow. Maximum active layer 15 to 50 cm deep. Surface characmarine limit. terized by frost polygons and thaw ponds related to vertical ice wedges extending to a depth of 2 to 3 m. Till and marine silt, undifferentiated: till-cored landforms blanketed by marine Based solely on airphoto interpretation. sediments. GLACIAL ENVIRONMENT GLACIOFLUVIAL DEPOSITS: water-sorted sediments deposited in, around, or near a glacier, largely as a result of meltwater Ice-contact stratified drift: sand and Many eskers are beaded or interrupted at Gk gravel deposited near ice margins in, irregular intervals by major bulges over, or around ice or in ice tunnels, marking positions where deltaic or subcommonly as eskers but includes isolated aqueous fan deposition took place during hummocky deposits of uncertain origin periods of slowed ice retreat. Go Esker pad outwash: sand, gravel, and silt with terraced, hummocky, and kettled surfaces. Gq Go: sand and gravel deposited by subaerial meltwater streams exiting from an esker tunnel and flowing between the esker ridge and valleysides in areas above marine limit; includes outwash fans and materials on the floor or at the mouth of meltwater channels. Gq: silt, sand, and fine gravel; same origin as unit Go but represents distal fine sediment debouching from an esker tunnel Vegetation is commonly sedge, grass, and moss growing on thin, fibrous peat. Surface characterized by thaw ponds and tundra polygons. Difficult to differeninto the sea. tiate from unit AM. Disintegration moraine: till, sand, and Sparsely vegetated periglacial features vary from mudboils in till to frost gravel, undifferentiated; occurs as short ridges or hummocks, thought to be deposited cracks in sorted sediments in holes and crevasses in stagnant ice; ridge orientation may form a reticulate pattern. TILL DEPOSITS: poorly sorted sediments with distinctive forms deposited directly by glacial ice. Till plain: generally sandy, silty, non-calcareous grey til! with <25 per cent clay-sized particles; includes areas of clayrich red till; Ts, prominent striped Till has liquid limits of 8 to 18 per cent and plasticity indices of 0 to 8 per cent. Susceptible to liquefaction under loading or during periods of increased moisture pattern on airphotos. (heavy rains, spring thaw). At lake margins characterized by cobble-covered, 2 m wide ribs separated by 2 m wide boulder-filled troughs, generally trending downslope to a water depth of about 2 m. Surface vegetated by shrubs, mosses, and grasses growing in elevated peaty rings around l to 2 m diameter patches of bare or lichen-covered mud (mudboils). Striped pattern (Ts) prominent on clay rich red till. Vegetation and minor periglacial features similar to those on till plains and marine muds. Tr Ribbed (Rögen) moraine: generally bouldery till, in places sand and gravel, forming Individual ribs may be asymmetric in crosssection with steep side facing down-ice; hummocks and straight to sinuous ridges, trains of ribs pass laterally into drumlin generally less than 1 km long and 2 to fields and are commonly drumlinized in the transition zone. Surfaces have sparse vegetation and generally a heavy cover of 10 m high; ridges generally oriented at right angles to and form trains parallel to direction of ice flow. large boulders and mudboils where composed of till, marked by frost cracks where composed of gravel. Hummocky till: till without significant Extensive areas are present in the region of Th boulder cover occurring as hummocks; inthe Keewatin Ice Divide and in some places adjacent to areas of ribbed moraine ([r]). Exact origin unknown; may have formed in cludes ridges of till that are minor end moraines or erosion remnants between subparallel meltwater channels. association with stagnant ice and in some places from erosion of till surfaces by streams in anastomosing meltwater channels. Vegetation and periglacial features similar to those on till plain (Tp). Precambrian intrusive igneous and meta-morphic rocks, red volcanic rocks, and unmetamorphosed sediments. Surface comprises more than 80 per cent Vegetation sparse, surface may be R outcrop. glacially rounded or covered by R/T R/Tr
R/AM R/AG
R/Mn R/TM
R/Mq R/Mp

Surface comprises 20 to 80 per cent outcrop or bedrock is mantled with an average of less than 1 m of the surficial deposit indicated. Small bedrock outcrop... Drumlin or fluting (direction of ice flow known, unknown)...... Crag and tail (direction of ice flow known).... Linear feature related to ice flow but obscured by solifluction processes, water-laid deposits, wave reworking, or trees...... Glacial striae (direction of ice movement known, unknown); location of measurement at centre of staff; older striae drawn with broken staff..... Trend of ribbed or minor moraine ridges..... Hummocky moraine..... DeGeer moraines; straight, approximately 2 m-high end moraine ridges built parallel to an ice front; possibly deposited annually by flowing ice submerged in a sea or lake..... Area of ridges formed by pack-ice shove..... Trend of nearshore marine ridges originating as beaches, bars, megaripples, and ice-shoved ridges... Esker (direction of flow known, unknown); may be confused with or obscured by nearshore features; projected beneath water surfaces where known or inferred ......>>> >>> >>> >>>> Meltwater channel; steep-sided channel commonly cut in bedrock or till...... Permanently drained postglacial lake basin; may include deposits of silty sediment with up to 15 per cent organic carbon..... Turbid lake; contains continual load of suspended sediment during ice-free periods; rarely occurs above marine limit and indicates instability or alteration of the active layer due to wave washing or solifluction processes... Limit of marine submergence.... Escarpment; generally in unconsolidated sediments..... Palsa-like feature..... Eolian deposits; commonly formed where ice shove or bank failures have disrupted the vegetation mat over alluvial Geological boundary.. Date Material
Lab no. Elevation Radiocarbon date... Geology by J.M. Aylsworth, A.N. Boydell, and W.W. Shilts, based mainly on airphoto interpretation with ground checking, 1973 Thematic information on this map is, in part, reproduced directly from author's copy Any revisions or additional geological information known to the user would be welcomed by the Geological Survey of Canada Base map, enlarged from 1:250,000 scale, published by the Mapping and Charting Establishment, Department of National Defence in 1967 Copies of the topographical edition of this map may be obtained from the Canada Map Office, Department of Energy, Mines and Resources, Ottawa, KIA 0E9 Mean magnetic declination 1981, 7<sup>o</sup>07.9' West increasing 7.4' annually. Readings vary from 4<sup>o</sup>26.9' in the SW corner to 10<sup>o</sup>15' in the NE corner of this map area



DISTRICT OF KEEWATIN

Scale 1:125,000

Universal Transverse Mercator Projection © Crown Copyrights reserved

NOV 3 1981

GEOLOGICAL SURVEY COMMISSION GEOLOGICUS

NATIONAL TOPOGRAPHIC SYSTEM REFERENCE AND INDEX TO ADJOINING GEOLOGICAL SURVEY OF CANADA MAPS

MAP 10-1980

MARBLE ISLAND

DISTRICT OF KEEWATIN

Elevations in feet above mean sea level