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SURFICIAL MATERIALS LEGEND - 49G, 49H, 340B south

Compiled by D.A. Hodgson; from field work in 1972-74, and airphoto interpretation.

EXPLANATION OF UNIT DESIGNATION

The material-genetic term forms the core of the unit designation. It describes a certain range of landforms and materials.

The textural modifier provides more specific information on the grain size distribution within a material.

The lithology superscript provides detail on the composition of rock/residual units, using the notation from the relevant bedrock map of the area as the key. A stratigraphic formational unit, which is frequently composed of more than one lithology, is not the ideal mode for presenting lithological information; however a great deal more field work would be necessary to map out each lithology.

The age superscript and process modifier are added when applicable.

The maps provide base data on the character and genesis of surficial materials. A further description of materials, plus information on topography, drainage, geomorphic processes, ground ice content, vegetation and sensitivity to disturbance, is available in the complementary biophysical map legend.

EXAMPLES

A.

LITHOLOGY SUPERSCRIPT: Heiberg Formation (sandstone, minor siltstone and shale)

TEXTURE: rubble, sand, outcrop → $rso\,RC^{Th}\,\bar{p}$ ← PROCESS MODIFIER: ice-wedge polygons 75-25% area

MATERIAL-GENETIC TERM: Rock/Residual and Colluvium

B.

TEXTURE: gravel → $g\,Ft^{G}$ ← AGE SUPERSCRIPT: glacial

GENETIC TERM: Fluvial Terrace

TEXTURAL MODIFIER

Summary of grain size classes

The textural description of a map-unit is drawn from scattered field observations (including more than 100 holes drilled and cored from 1 m to 5 m depth) and a few laboratory checks of samples, from estimates of the composition of depositional landforms identified on air photographs, and from estimates of the probable weathering products of source rocks.

In many units, materials are composed of more than one grain size class. In this case, classes are combined into a broader group (e.g., fines), or listed in the order of their occurrence. Further detail may sometimes be obtained from the relevant biophysical unit description.

- **c** clay (.004 mm)
- **si** silt (.063-.004 mm)
- **ȼ** silt and clay undifferentiated (<.063 mm)
- **ꞩ** silt and fine sand, undifferentiated (.25-004 mm)
- **f** fines: clay, silt and fine sand present in unknown proportions (<.25 mm).
- **s** sand; including fine sand if present (2-.063 mm).
- **g** gravel (2-256 mm) little or no fines.
- **b** boulders (>256 mm).
- **r** rubble: angular rock fragments >2 mm in size; commonly up to 25% of the total mass is represented by sand or fines either in the fragment interstices, or concentrated locally by frost action.

  Note that the character of rubble is dependent on the source rock; e.g., indurated sandstone produces fragments and sand, shale produces platy fragments and silt-clay. Refer to the rock/residual superscript and key to determine the lithology of source rocks.

  Rubble on resistant formations often represents a veneer derived from mass wasting of competent bedrock.
- **o** outcrop: exposed bedrock surface; rock intact, though may be moderately weathered. Refer to rock/residual superscript to determine lithology.
- **p** peat

MATERIAL-GENETIC TERM

Identified from air photographs and by field observation

E Eolian deposits

Wind-blown material, usually sand or coarse silt, on and adjacent to poorly-vegetated fluvial sediments. Only applied when eolian landforms evident - mainly ripple marks, low dunes (<1 m high). Unstructured deposition possibly much more widespread.

There is sporadic evidence of eolian erosion - shallow blow-outs, planed ice-warped sediments, residual pillars - on unconsolidated sandy members of Mesozoic formations, especially below the marine limit, and on the Slidre River Fill (see under 'S' in this panel). These areas are not identified on the map.

Fp Fluvial valley flat: channel zone + flood plain

Zone liable to stream flooding. Active stream channel zone, and flood plain if present and identifiable. There are normally one or two main channels. Where the valley flat is broad, a secondary network of braided channels contains the excess discharge during snowmelt or following heavy or extended rainfall.

A fluvial plain will only partially reflect the material through which a stream is passing, as the coarser fraction in the bedload is emphasized. The bedload frequently includes coarse material derived from an upstream source.

Ft Fluvial terrace

Inactive fluvially worked surface at higher elevation than laterally adjacent active zone, and usually separated from it by a bluff 1-10 m high. Surface morphology and materials similar to adjacent active zone (see Fp), apart from channels which commonly have silt and/or peat infill.

Underlain by a variety of stratified fluvial sediments. Thickness commonly >2 m. Coarse surface deposits may be underlain by fine-grained (and ice-rich) deltaic sediments deposited when sea level was higher.

Proglacial fluvial sediments (Ft^{G}) commonly thick (10 to 50 m) with texture varying from similar to above, to massive gravel or sand deposits.

Ftp / Fpt Fluvial valley flat and terraces indivisible at the scale of the map. Order of precedence of 'p' and 't' determined by relative area of these components in the combined unit.

Fd Fluvial delta

Sediment deposited where a stream enters the sea or lake. Commonly divisible into coarse topset beds, finer foresets, and finer bottomset beds; i.e., coarse material overlying fine, Fine-grained 'slackwater' deposits at the margins. The fine-grained sediments commonly have high excess ice values.

Most deltas in the map-area are built into tidewater, and their form has been modified by a combination of lateral channel shifts and prograding as sea level has fallen in the course of the Holocene. The result is a series of terraces in addition to an active braided surface. Deltas with inactive surfaces extensive enough to be mapped as a unit or partial unit can be identified by an 'I' (= inactive) superscript.

Ff Fluvial/Alluvial fan

Fan or cone-shaped deposit of stream sediments on land, usually at a point where the gradient abruptly decreases. Composed of a heterogeneous mixture of materials from upstream, though with a tendency for grading from coarser to finer from apex to toe.

Much of the fan surface is normally inactive, though the one or more active channels are liable to rapid lateral shifts when discharge is high.

m Marine sediment

Sediment deposited by nearshore marine or lagoonal processes; or deposits with other origins, reworked by the falling Holocene sea level. Marine beaches are described separately (see mb). Dominantly finely-laminated silt, clay; minor fine sand, gravel; deposited in a low-energy environment. Commonly underlain at 1-4 m depth by poorly consolidated fine-grained rocks. Ice wedges, and thin (sometimes massive) interbedded ice common.

Thick (>2 m) deposits, with surface slopes >2°, are commonly finely gullied.

mv Marine sediment veneer

Veneer (<1 m thick) of marine deposited or reworked sediment. Commonly derived from underlying (rather than adjacent) deposits.

mb Marine beaches

Flights of ridges and swales, elevated above present sea level by postglacial isostatic uplift. Commonly found where high energy conditions exist (relatively, for Arctic) and/or coarse material is available.

Ridges are normally sand or gravel, to 1.5 m high, though commonly <50 cm. Swales may be underlain by a finer fraction, with a thin veneer of organic material. Beach material (1-3 m thick) commonly overlies fine-grained marine sediments, possibly with a high ice content. Ice wedges are common.

M Moraine

Sub-glacial non-fluvial deposits, which may vary from clay or silt, through a heterogeneous mixture of grain sizes, to gravel.

In the map-area, deposits may be divided into:

(1) Small areas of clearly identifiable morainal deposits on coastal margins at the north end of Eureka Sound. In the extreme NW sector of the Fosheim Peninsula, deposits are a mixture of silt, clay, sand and stones, with some stratification discernible. Thicknesses exceed 15 m at least locally. Shell fragments incorporated in the deposits indicate that the material was in part dredged from adjacent Greely Fiord and Eureka Sound. A discontinuous lag gravel cover results from subsequent (Holocene?) marine washing. Ice wedges, thin horizontal ice partings, some massive ice, scattered flowslides recorded.

(2) Discontinuous thin morainal deposits, barely distinguishable from marine-reworked or residual bedrock materials; overlying poorly consolidated bedrock. Glacial deposition is the probable source of the coarse sand, and small quantities of gravel and boulder size material which are commonly intermixed with fine-grained weathered bedrock.

(3) Discontinuous coarse morainal deposits above the marine limit and overlying KTe bedrock and thick gravel deposits (see P), adjacent to the Sawtooth Mountains. Sandstone, limestone, granite, boulders and gravel; sand, silt, often indistinguishable from colluvium derived from the thick gravels.

(4) Discontinuous thin to thick, generally coarse grained morainal deposits adjacent to the main Ellesmere ice cap. They date from a late-glacial maximum stage, and from a Neoglacial readvance.

S Slidre River valley fill

A basin filled by unconsolidated fluvial, deltaic, estuarine, marine and possibly morainal sediments. Present surface of basin generally rises to north and south of axis along the Slidre River, and from sea level in the west, to ca. 150 m in the east. Thickness 40 m at least locally.

Sediments largely fine sand/silt or fine sand and silt/clay laminates from <1 cm to several metres thick. Also includes strata of peat, in situ and reworked, and placer wood. Surficial materials in upper 1-2 m are predominantly fine sand and silt, with discontinuous lag(?) gravel cover (<10 cm thick) resulting from eolian processes or marine reworking. The bulk of the fill however is silt or clay, including some thick marine clays (rare thin shells). Cross-bedded sands occur near the basin (i.e., Slidre River) axis, particularly at lower elevations. Scattered peat deposits, of mid-Holocene age, to 3 m thick, occur in minor tributary valleys.

Channel zones of streams with sources within the unit, and lower courses of larger rivers, are composed of sand and silt. Streams originating outside the unit, including the upper courses of larger rivers, have gravel and sand channel zones.

Ice is a significant component. It takes the form of ice wedges, thin laminae, and massive ice recorded to 5 m thick. Flowslides are common on thick clay and silt.

The age of much of the fill may be older than Holocene. Suggested by (a) extent and thickness of the fill in a basin with a limited catchment area; and by (b) the extensive marine-planed surface at ca. 120 m, when radiocarbon dates suggest a smooth Holocene uplift curve starting with a 160 m maximum sea level.

The fill is underlain mainly by the poorly-consolidated Eureka Sound Formation (KTe). Areas of marine-planed KTe rocks lie within and adjacent to the fill, and KTe rocks are commonly exposed along incised river courses.

P Gravel: Pleistocene or Pliocene

Conjectured to be remnants of a preglacial sheet of coarse fluvial deposits which formerly extended over a large part of the lower, less resistant lithologies of western Ellesmere Island and eastern Axel Heiberg Island. Parts of areas mapped as 'P' may be equivalent in age to the Beaufort Formation, however much is definitely a later deposit, adjusted to higher base levels than the Beaufort on northern Axel Heiberg Island. Granites, common in gravels of western Fosheim, indicate considerable transport involved.

Includes boulders, cobbles, gravel, with sandy to silty clay matrix; peat layers; and heterogeneous mixtures which may be colluvial or morainal deposits. Coarse materials usually exposed on margins of deposits. Away from margins (i.e., 10 - 500 m distance), gravels are commonly overlain by 1-3 m of gravel and fines, possibly morainal, or weathered material. Thicknesses >50 m recorded.

C Colluvial deposits

Material displaced or altered by mass wasting processes to such a degree that it differs in composition and/or structure from subjacent or adjoining source materials.

Dominant mass wasting process is solifluction; chiefly active during the brief (1-3 weeks) snowmelt period. Also close-spaced (1-2 m) seepage lines, associated with sorted and non-sorted stripes, particularly on fine-to medium-grained materials. Solifluction lobes common on inclines surfaces of coarse-textured unconsolidated materials. From the widespread occurrence of ice-wedge troughs, it appears that solifluction is currently a relatively slow-acting process.

Cf Colluvial fan - talus slopes

Fan or cone-shaped deposit of terrestrial sediments on steep slopes, with apex of fan commonly inclined at angle of repose of material (30-40°). Intervening areas commonly fresh to highly weathered bedrock. Fans may coalesce on lower segments of slopes to form a continuous apron.

Material is transported to and down the fan by rockfall, avalanche, solifluction and creep. Fluvial processes may also be involved and fluvial and colluvial fans may overlap. Composition is dependent on weathering products of source rocks, but is usually a heterogeneous mixture ranging from boulders to sand or fines.

Also includes areas of long (to 100 m) downslope oriented solifluction lobes.

R Rock/Residual

Bedrock; commonly mantled by residual weathered material, 1-5 m thick, on all but the most resistant lithologies or where slopes are steep and erosional processes active.

May include up to 25% colluvium. The composition of the materials in an 'R' unit can be determined from"

1. The textural modifier (note that 'o' denotes outcrop of fresh to moderately weathered rock).
2. The lithology superscript.

Exotic materials are often present in residual materials (e.g., granite, limestone, diabase, over sandstone bedrock), derived from former ice sheets (see M), gravel cover (see P) or higher sea levels (see Rm).

Note that even with a complete cover of weathering products, or a partial colluvial cover, the structure of underlying bedrock is often visible on air photographs.

RC Rock/Residual and Colluvium

75% to 25% rock/residual, the remainder colluvium.

CR Colluvium and Rock/Residual

75% colluvium, the remainder rock/residual

Rm Marine reworked or washed Rock/Residual

Bedrock or residual material reworked during higher sea levels. Not always distinguishable from in situ residual material, however texture commonly slightly changed (e.g., fine sand, minor gravel added to silty-clay residual material). A discontinuous veneer of marine sediments, including beach ridges, may be present.

Relief is commonly subdued, due to repeated (i.e., not solely Holocene) periods of marine planation. Marine limit ca. 160 m in western Fosheim, falling to ca. 80 m at east end of Bay Fiord.

Ov Organic deposits

Accumulated deposits of plant material. Term normally used together with peat (p) textural modifier. Deposits commonly 0.5 m thick, however peat, sand and silt deposits >10 m thick have been noted in some minor stream valleys, with organic material dating from mid-Holocene (climatic optimum) period. Only the most extensive and conspicuous deposits mapped.

I Perennial Ice

Glacierets, glaciers, ice caps.

AGE SUPERSCRIPT

A Active forming processes

e.g., Fd^{A} deltaic sediments currently being deposited.

I Inactive forming processes

e.g., Fd^{I} delta forming processes inactive.

G Glacial: forming processes associated with an ice mass; not currently active unless specified.

Usually applied to fluvial processes. e.g. Ft^{G} glacio-fluvial terrace.

As late-glacial conditions produced larger volumes of water and higher energy conditions that exist at present, deposits are normally coarser, more extensive and thicker than Holocene fluvial deposits.

Where terms are used in combination, the leading letter is dominant.

PROCESS MODIFIER

Identifies important processes which may modify the texture and form of materials.

If a modifier is added, then the process affects >75% of the unit.

If a bar (-) is placed over the modifier, then 25% to 75% of the unit is affected.

p Ice wedges

Ice-wedge polygon troughs identified from air photographs or in the field, indicating a substantial volume of surficial material over the unit (ca. 10-20% in the upper 2 m) is wedge ice.

Not all polygon areas have been identified, as even a large ice wedge may have only a weak surface expression, particularly if mass movement processes are active.

k Thermokarst

Local depression of the ground surface following thawing of ground ice. Mainly on marine plains, which now have a close pattern of small ponds. Ponds may also occupy poorly-drained depressed-centre polygons. They are commonly floored by a thin veneer of fines and organics.

pk Ice-wedge troughs - thermokarst melting, thaw ponds.

Wedges over which greater than average amount of thawing has taken place, resulting in deep (>1 m) broad troughs, often containing standing water for part, if not all, of the summer.

fk Flowslides

Thaw slides and/or flows, commonly retrogressive, developed on high ice content materials. An amphitheatre form, with a head scarp 1-3 m high, and an extended downslope flow zone.

SYMBOLS

- unit boundary
- unit boundary poorly defined
- tie line linking units with same designation
- prominent beach ridge(s) too narrow to be drawn as an individual map-unit
- * gravel or unconsolidated conglomerate knoll, too small to be drawn as an individual map-unit
- flowslide (see process modifier panel)
- $\frac{m}{R}$ cover of one material (<5 m thick) over another which will probably be exposed in stream cuts, depressions.
- & + compound units; see description below
- ? expression of uncertainty; e.g., M? = possibly morainal

Compound Units

Where the areas of two or more map-units are too small to be separately delineated at the map scale, compound units are used.
Components are listed in order of area.

Two linking symbols are used:

1. If the texture term is common throughout the unit, terms are linked by ' + ' e.g., fgFf + C
2. If different textural terms apply to each component of the unit, terms are linked by ' & ' e.g., gFf & fC

SEE ROCK/RESIDUAL PANEL ON NEXT PAGE →

SURFICIAL MATERIALS LEGEND, CONTINUED

ROCK/RESIDUAL LITHOLOGY SUPERSCRIPT

Descriptions of the bedrock are based chiefly on reports by Balkwill and Bustin (1975), Christie (1967), Kerr (1967a, 1967b, 1967c, 1976), Roy (1972), Thorsteinsson (1971a, 1971b, 1972a, 1972b, 1974), Thorsteinsson and Tozer (1970), Tozer (1961, 1963a, 1963b), Trettin (1971).

Typical weathering products and residual materials were examined in the field in 1972, 1973 and 1974

Multiple superscripts - use of '+' and '-'

Ki + JKd = both formations present within unit mapped.
Kk - JKd = all or most of formations in the stratigraphic column from Kk to JKd present within unit mapped

KTe Eureka Sound Formation

Dominantly quartzose sandstone: buff, grey, white, red-brown; fine- to coarse-grained; thickly bedded to laminated; partly iron-cemented, otherwise poorly cemented. Interstratified with mudstone: light to medium grey, silty; shale: medium to dark grey, partly carbonaceous; siltstone: light to dark grey, occasionally iron-cemented. Minor thin-bedded coal, lignite, carbonized wood.

Surficial materials: scattered slightly to moderately weathered outcrop; otherwise formation commonly exposed as completely weathered rock/residual medium grained sand to silt size material, minor rubble. Finer-grained beds overlain by silt, minor clay; clay locally dominant. The interstratification, together with folding, faulting, and subsequent erosion precludes extensive outcropping of any one lithology. Slopes prone to gullying, and badland topography. Scattered flowslides in fine grained beds east of Sawtooth Range.

The formation may be masked by a variety of overlying unconsolidated materials. Below ca. 150 m, thin fines and/or sand marine sediments and reworked KTe materials are common. The Slidre River basin has a thick fill of fluvial and marine sediments, not always distinguishable from the bedrock. Above 150 m, there is an extensive veneer of stony morainal material; and tablelands and mesas may be capped with thick Quaternary or earlier fluvial gravels.

Kk Kanguk Formation

Shale, soft, dark grey to black; minor siltstone, sandstone.

Generally recessive; weathers to clay, silt, but residual material may also contain sand derived from marine reworking, morainal deposits, or solifluction from upslope units. Outcrop and residual material easily gullied if slopes steep and not armoured by coarser deposits or bound by vegetation.

Kh Hassel Formation

Sandstone: quartzose, white to grey, medium to fine grained and silty, poorly cemented. Minor well-cemented sandstone: quartzose, flaggy, red or grey-green, medium to fine grained.

More resistant than adjacent Kk and Kc rocks; generally slightly higher elevations and better drained. Outcrops mainly as friable sand, minor silt and clay. Typical sand:silt:clay ratio is 3:1:1. Well-cemented units and adjacent areas overlain by flaggy sandstone pavement.

Kc Christopher Formation

Shale, soft, fissile, dark grey to green grey; minor sandstone and siltstone.

Recessive; weathers to dark grey to black crumbly shale fragments and clay. As with Kk materials, residual materials may also contain sand derived from marine reworking, morainal deposits or solifluction from upslope units. Below the marine limit, a marine veneer (partially removed by subaerial processes) might typically be 2 m thick, with a sand:silt:clay ratio of 2:3:5. Underlying weathered shale ratio is 0:2:8. Flowslides noted on these materials probably triggered by thawing massive ground ice.

Ki Isachsen Formation

Sandstone: quartzose; buff, white, grey, medium to coarse grained; medium to massively bedded (commonly cross-bedded); loosely cemented (though degree of consolidation varies). Interbeds of dark conglomerate, siltstone, shale, coal.

Resistant relative to adjoining fine-grained lithologies; locally cliff-forming. Generally weathers to loose sand, with discontinuous lag pavement of better-cemented fragments.

K Cretaceous formations undivided (Ki, Kc, Kh, Kk)

Symbol used where contacts of different Cretaceous formations (and lithologies) obscured by mass movement, marine reworking, etc.; or where outcrop area of individual component formations are too small to map out. Surficial materials generally fine sand, silt and clay.

JKd Deer Bay Formation

Shale and silty shale; black, laminated, closely-jointed, poorly-consolidated. Thin-bedded limestone intervals near top of succession.

Generally recessive. Weathers to dark crumbly shale fragments, and clay and silt. Below ca. 150 m, there is typically a buff to grey-weathering veneer of marine reworked sediments, 1-3 m thick, with a sand:silt:clay ratio of 2:4:4 plus some gravel. Underlying weathered shale ratios of 0:6:4 to 0:3:7.

J Jurassic undivided (Awingak, Savik, Borden Island Formations)

Dominantly quartzose sandstone; buff, grey, green, white, dusky red; fine to coarse grained, sometimes silty; thin to thick bedded; poorly cemented to indurated. Interbedded grey to black silty shale; thin bedded and hard, to soft and crumbly siltstone.

Beds generally moderately to steeply dipping in west Fosheim and east Axel Heiberg; thus they outcrop in narrow strike-aligned bands, commonly 100 m or less wide. Sandstones generally (though not exclusively) more resistant than finer-grained lithologies. May be cliff-forming, also may weather to hoodoos; differential weathering common.

Weathers to fine to medium grained sand; lesser silt, angular sandstone rubble. Minor outcrop of indurated rock.

T̄h Heiberg Formation

Dominantly quartzose sandstone; buff, grey, white; fine to medium-grained, sometimes silty; commonly cross-bedded, massive to thin bedded; indurated. Lower lithological division chiefly thin bedded, with lesser interbedded grey siltstone and shale. Gabbro sills represent 5-10% of stratigraphic column; also gabbro dykes.

Attitude of beds, varying from flat-lying to steeply dipping, has marked effect on local relief; however formation generally resistant, and relief exceeding 500 m common. Upper cyclic sandstone minor siltstone, shale, coal, commonly weathers to a series of strike-aligned scarp ridges and valleys, as with the underlying Jurassic formations.

Surficial materials dominantly fine to medium grained sand, lesser silt, minor clay. Fine-grained materials locally dominant. Extensive areas of rubble, composed of sandstone blocks and gravel, gabbro blocks, platy shale fragments. Minor outcrop, on scarp crests, upper segments of cliffs, dykes. Underlying lithological differences often masked by solifluctіng materials; colluvial and alluvial fans on steeper slopes.

T̄s Schei Point Formation

Siltstone and interbedded fine-grained sandstone; quartzose, highly calcareous, grey, thick to thin bedded, indurated. Intervening shale member, grey, thinly bedded.

Weathers to fine sand and silt, minor clay, flaggy siltstone and sandstone rubble. Minor brown weathering sandstone and siltstone outcrop, with intervening recessive intervals marking less resistant siltstone beds and shale members.

T̄bl Blind Fiord Formation

Siltstone and fine sandstone, in part micaceous; light to dark green and grey, medium to thin bedded, calcareous to non-calcareous. Interbedded grey shale.

Weathers to platy siltstone and shale fragments, fine sand silt, minor clay. Relatively resistant.

T̄ba Blaa Mountain Formation

Shale, medium grey to black, calcareous and non-calcareous members. Interbedded with siltstone; grey, calcareous, thin bedded. Minor sandstone. Gabbro sills to 100 m thick represent ca. 20% of the stratigraphic column.

Weathers to platy shale fragments, gabbro blocks, silt and clay; with the fines locally dominant. Some outcrop of gabbro sills and dykes.

Shale and siltstone generally recessive, but the formation as a whole is given topographic prominence through the strength of the gabbro sills; e.g., the spine of Mount Lockwood and the crest of Blacktop Ridge in NW Fosheim; the ranks of sharp crested ridges in the Joy Range of E. Axel Heiberg Island.

T̄b Bjorne Formation

Quartzose sandstone, light yellow buff grey, cross bedded and medium bedded, friable to well cemented (calcite), medium to fine grained. Minor shale interbeds

Weathers to porous red, brown, yellow sandstone blocks, or to sand.

May be highly resistant, with steeply inclined slopes of block-fields; or where strata gently inclined (e.g. Hamilton Peninsula), then a succession of close spaced minor scarps and recessive intervals is common. Hoodoos commonly developed in some sandstone units.

Ptf Trold Fiord Formation

Quartzose sandstone, thin to thick bedded, resistant to friable and soft, predominantly fine grained. Minor interbedded resistant limestone and conglomerate.

Weathers to blocks, sand.

Pa Assistance Formation

Quartzose sandstone, medium bedded, soft, fine grained. Lesser siltstone.

Weathers to sand and sandstone rubble.

Ps Sabine Bay Formation

Quartzose sandstone, thick bedded to massive, generally poorly consolidated but harder massive units topographically outstanding, fine to medium grained. Minor quartz and chert pebble conglomerate.

Weathers to blocks, sand.

Pt Tanquary Formation

Quartzose sandstone, well bedded, hard to soft, fine grained; and limestone, commonly quartzose.

Weathers to rubble, sand, silt.

Pmb Mount Bayley Formation

Anhydrite and gypsum.

Lithology and weathering characteristics similar to Otto Fiord Formation (Co 1), though not diapiric.

CPan Antoinette Formation

CPan Mainly limestone, thin to thick bedded, fine grained, variably argillaceous and silty. Varying proportions of siltstone, sandstone, shale and anhydrite.

Weathers to grey to yellow rubble, silt, sand? Generally as or more resistant than Permian sandstones.

CPbc Belcher Channel Formation

Cpbc Units of resistant limestone alternating with units of less resistant quartzose sandstone and siltstone. Resistant limestone dominant, medium bedded to massive, fine to coarse grained. Sandstone and siltstone calcareous, hard to soft, fine grained.

Weathers to grey to yellow limestone and sandstone and siltstone rubble, silt, sand. Lithologically similar to Pt and CPan.

Cc Canyon Fiord

Quartzose sandstone, medium to thick bedded, well cemented to soft porous and friable, fine to medium grained. Lesser limestone, intercalated mudstone, siltstone, shale. Resistant conglomerate at base.

Characteristically bands of red weathering sand, silt, platy sandstone and limestone rubble, minor clay, pebbles near base of succession.

Differentially eroded resistant and recessive beds provide a succession of major and minor scarps and short to long gentle slopes.

Dob Okse Bay Formation

Succession of quartzose and argillaceous sandstone, sandy mudstone and shale.

Weathers to rubble, fines, with succession of resistant and recessive units.

Dbl Blue Fiord Formation

Resistant dolomite and limestone.

Weathers to rubble or rubble and silt.

De Eids Formation

Calcisiltite or limy quartz siltstone, fine grained, fissile. Recessive.

Weathers to fines, platy siltstone rubble?

Minor resistant quartz sandstone members.

Dv Vendom Fiord Formation

Quartzose sandstone, thin bedded, fine grained; quartzose siltstone; minor anhydrite and gypsum, limestone dolomite. Very recessive.

Red weathering fine sand, silt, clay, platy rubble.

Dc Unnamed Devonian rocks

Laminated dolomitic siltstones and silty dolomites. Recessive. No surface observations.

SDi Imina Formation

Alternating very fine grained calcareous sandstone, slaty calcareous siltstone and slaty calcareous shale, with minor conglomerate and breccia. No surface observations.

S-, O-Dcp Cape Phillips Formation

Slaty shale, siltstone thin bedded, dolomitic, Recessive to moderately resistant.

Weathers to platy fragments and fines.

Osa Allen Bay Formation - See below.

ODar Allen Bay & Read Bay Formation, undivided.

Lower division (Allen Bay) is a uniform dolomite, minor limestone; highly resistant. Upper division (Read Bay) is limestone, with significant clastic component; resistant.

Weathers to carbonate blocks, minor silt.

Oc Cornwallis Group; undivided. Irene Bay, Thumb Mountain and Bay Fiord Formations.

Chiefly Oct, lesser Ocb, minor Oci. See below.

Oci Irene Bay Formation

Limestone, shaly, thin to medium bedded, recessive.

Weathers to rubble, silt.

Oct Thumb Mountain Formation

Limestone, slightly dolomitic, argillaceous, thick-bedded; resistant and bluff forming. At Cañon Fiord, a less resistant thin-bedded, shaly, cherty limestone.

Weathers to rubble, or rubble and silt.

Ocb Bay Fiord Formation

Limestone, silty and shaly, thin-bedded; some fine grained dolomitic limestone; minor anhydrite, quartz siltstone, shale; recessive. At Cãnon Fiord shaly and silty clastic components dominant.

Weathers to rubble and silt.

Oe Eleanor River Formation

Limestone, argillaceous, thick-bedded, fine grained; resistant.

Weathers to rubble, minor silt.

Ob Baumann Fiord Formation

Anhydrite, gypsum, minor limestone, shale; very recessive except some limestone beds.

Weathers to fines and rubble

Oco Copes Bay Formation

Limestone, thin to medium bedded, fine grained. Minor dolomite, conglomerate, shale.

Resistant, especially relative to overlying Ob.

Weathers to rubble, minor silt.

Ou Lower Ordovician carbonates undivided

Limestone, thin to medium bedded, fine grained; minor limestone conglomerate, sandstone, shale. Generally resistant. No surface observations.

Є Cambrian and older rocks

Dolomite, limestone, sandstone, gneiss, granite.

D-Є Devonian, Ordovician, Cambrian and older rocks, undivided, but chiefly Allan Bay, Thumb Mountain and Eleanor Bay Formations.

Co1 Diapirs with Otto Fiord Formation source

Anhydrite and gypsum; white to light grey. Minor intercalated limestone and shale.

Surficial material predominantly gypsum, ranging from large crystals to grains, with solution pitted outcrop. Discontinuous lag veneer of sandstone and limestone pebbles (morainal deposits?). Microrelief extremely rough; and macrorelief has been described as chaotic due to both general solution and concentrated stream erosion (Thorsteinsson, 1974). Diapirs are visually prominent due both to relief and to high albedo.

I Basic sills and dykes

Mainly gabbro, dark greenish grey to black, medium grained; also diabase, basalt. Highly resistant relative to country rock, and commonly a cliff former.

Weathers chiefly to blocky rubble.

Dykes may be present in all formations older than Kanguk. Sills particularly thick (>100 m) in Blind Fiord, Blaa Mountain and Heiberg Formations.

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