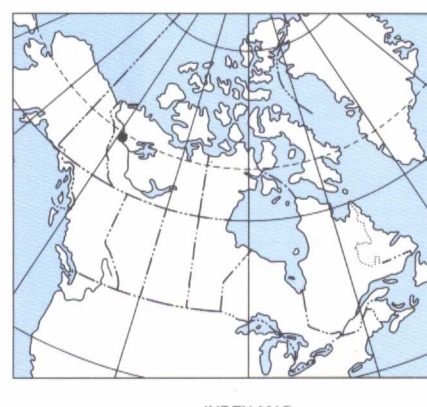
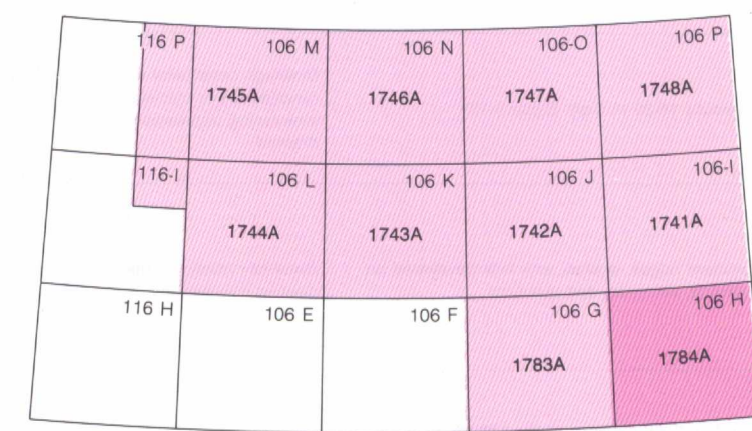
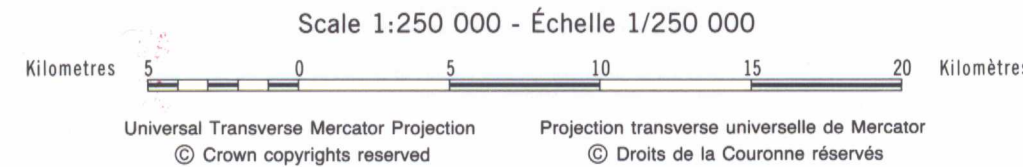


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MAP 1784A  
SURFICIAL GEOLOGY  
**SANS SAULT RAPIDS**  
DISTRICT OF MACKENZIE  
NORTHWEST TERRITORIES



- QUATERNARY**
- HOLOCENE**
- ORGANIC DEPOSITS:** peat and muck; occurring as flat to gently sloping plains
- FO - fenland, consisting of woody sedge peat, 2-3 m thick; pO - peatland, sphagnum peat generally underlain by sedge and woody sedge peat, 2-4 m thick; pO-k - peatland containing thermokarst depressions; pO - peatland and fenland undivided, peatland dominant; fpO - peatland and fenland undivided, fenland dominant
- Fenlands constitute 10-50% of map unit
  - Peatlands constitute 10-50% of map unit
  - Peatlands and fenlands undivided make up 10-50% of map unit
- ALLUVIAL DEPOSITS:** sand, silt, and minor gravel in association with modern drainage regime
- Ap, Ap-k, At, Atv - coarse sand and gravel with silt and fine sand occurring as channel and overbank floodplain sediments, 3-5 m thick; Ap-k - floodplain sediments containing thermokarst depressions; At - sand and silt, in places underlain by gravel, occurring as terraces, 2-5 m thick; Atv - alluvial deposits, 1-2 m thick
  - Af - Mainly silt, sand, and minor gravel locally with discontinuous layers of peat; occurs as fans and aprons; within Mackenzie Mountains comprises mainly gravel, locally with lenses of mudflow deposits
  - Ax - Complexes of Ap, At, and At undivided
- COLLUVIAL AND SHEETWASH DEPOSITS:** diamicton, rubble, and organic-rich silt and sand derived from bedrock and surficial materials by a variety of colluvial and sheetwash processes
- Cv, Cb, Ca - veneer deposit that conforms to bedrock topography, <3 m thick; Cb - blanket deposit that conforms to bedrock topography, >3 m thick; Ca - organic-rich silt and sand developed on glacial lacustrine sediments or soft bedrock, 0-2 m thick
  - Cz - Landslide deposits: rubble and/or diamicton occurring as stepped or fan-shaped deposits; formed by rotational slumping or retrogressive-thaw flow failure of glacial lacustrine sediments or shale
  - Ct - Cryoplanation terrace deposits: colluvial rubble occurring as a 1-3 m thick mantle on a step or bench in a mountain slope
  - Cx - Complex consisting of two or more of Cv, Cb, Ca, Cz, and At undivided
- PLEISTOCENE**
- GLACIAL LACUSTRINE DEPOSITS:** silt and clay with minor sand, in many places overlain by a discontinuous veneer of organic deposits and locally overlain by sand; sediments laid down in a glacial lake
- Lp, Lp-k, Lv, Lb - Lp - thick sediments occurring as a flat to gently sloping plain, 2-15 m thick; Lp-k - lacustrine plain containing thermokarst depressions; Lv - veneer of sediments occurring as a flat to gently sloping plain, <3 m thick; Lb - blanket of lacustrine sediments occurring as gently to moderately sloping plain, 2-5 m thick
  - Lx, Lx-k - Lx - lacustrine complex or transitional between glacioluvial and lacustrine deposits, consisting of sand, 3-20 m thick; Lx-k - lacustrine complex containing thermokarst depressions, 3-20 m thick
- GLACIOFLUVIAL DEPOSITS:** sand and gravel, locally with a veneer of eolian silt or sand; deposited as proglacial or ice contact sediments by glacial meltwater
- Gp, Gt, Gd, Gf - Gp - flat to gently sloping plain, 2-30 m thick; Gt - underlying a terrace, 2-30 m thick; Gd - gently sloping delta, 2-30 m thick; Gf - gently sloping fan, 2-30 m thick
  - Gh, Gr - Gh - hummocks, <25 m thick; Gr - ridges, <25 m thick
  - Gx - Glacioluvial complex, areas of Gp, Gh, and Gr undivided
- GLACIAL DEPOSITS:** nonsorted silt, sand, and clay with some coarser clasts (till); till of mountainous areas has abundant pebbles, cobbles, and boulders in silty sand matrix; deposited by glacier ice and occurring in a variety of different landforms. Montane deposits are designated as follows: M<sup>m</sup> - penultimate glaciation; M<sup>o</sup> - last glaciation; M<sup>u</sup> - uncorrelated; and M<sup>h</sup> - hybrid montane and Laurentide
- Mp, Mpv - Moraine plain: till occurring as: Mp - flat to gently sloping plain, 3-20 m thick; Mpv - variable area of thick and thin till, 1-3 m thick
  - Mv, Mb - Mv - veneer of till with slopes conforming to underlying bedrock topography, 0-2 m thick; Mb - gently to moderately sloping plain controlled by bedrock, 3-6 m thick
  - Md, Mvd - Drumlinoid and hilly plain: till occurring as: Md - plain with individual drumlins or extensively fluted, 2-30 m thick; Mvd - thin till over glacially eroded streamlined bedrock ridges, 0-3 m thick
  - Mh, Mr, Mm - Hummocky and ridged moraine: generally coarse till (20-50% pebble size) in plains, typically bouldery till in mountains; Mh - individual and coalescent hummocks; locally contains hummocks of gravel, relief 15-50 m, <50 m thick; Mr - individual to compound, either straight or sinuous ridges 15 to 60 m high, <60 m thick; Mm - broad hummocks or low hills with 10-20 m relief, <20 m thick
  - Mx - Glacial deposit complex: largely hummocky, ridged, and hilly till undivided
- PRE-QUATERNARY**
- BEDROCK:** Cretaceous shale in plains; Cretaceous sandstone in Peel Plateau; rocks of mountainous areas range from relatively weak shale, sandstone, and dolomite to resistant carbonates to highly resistant quartzite of Proterozoic to Upper Devonian age
- R, Rt - R - primarily prominent ridges, escarpments, and hills; Rt - subhorizontal bedrock surfaces exposed as channel floors

- Geological boundary (defined, approximate) ...
- All-time limit of Laurentide ice Sheet (defined, approximate, assumed) ...
- Limit of Kely Lake Phase (defined, approximate) ...
- Limit of Gayna River and Mountain River glaciations (defined, approximate) ...
- Cirque (Mountain River Glaciation, Gayna River Glaciation) ...
- Erratic of shield origin ...
- Moraine ridge ...
- Drumlin or drumlinoid ridge (sense of ice flow determined, not determined) ...
- Crag and tail ...
- Esker ...
- Kame ...
- Glacial meltwater channel (major, minor) ...
- Shoreline of former lake (defined, approximate) ...
- Filled channel or buried valley ...
- Rock glacier and area of rock glacier ...
- Karst sinkhole ...
- Cryoplanation terrace ...
- Eolian veneer mainly of fine sand, dunes ...
- Slope failure (in most places retrogressive-thaw flow slides) ...

Final interpretation and compilation by A. Duk-Rodkin; geology by A. Duk-Rodkin (1986-1989) and O.L. Hughes (1969-1973; 1986-1987)

Geological cartography by E. Everett, Geological Survey of Canada  
Colour separations were produced using digital methods

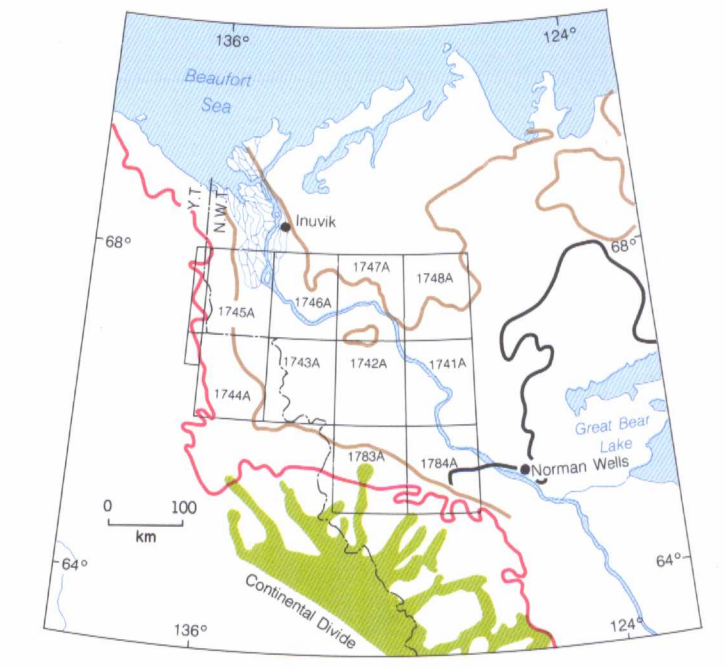
Any revisions or additional geological information known to the user would be welcomed by the Geological Survey of Canada

Base map at the same scale published by the Surveys and Mapping Branch in 1960

Copies of the topographical edition of this map may be obtained from the Canada Map Office, Department of Energy, Mines and Resources, Ottawa, Ontario, K1A 0E9

Mean magnetic declination 1992, 33°35' E, decreasing 14.2' annually. Readings vary from 32°54' E in the SW corner to 34°17' E in the NE corner of the map

Elevations in feet above mean sea level



ACKNOWLEDGMENTS

Additional information on surficial geology and granular materials obtained from: Department of Public Works, 1974-77, Mackenzie Highway, N.W.T. final design submission; Foothills Pipe Lines Ltd., 1975, Northwest Territories, mainline route; Ripley, Kohn & Leonard Alberta Ltd. and J.C. Sprule and Associates Ltd., 1970, Mackenzie Valley Pipeline, Vol. III Photo mosaics and pipeline route; Chevron, Imperial, Shell, Sigma and Texaco oil companies provided borehole data from seismic shotlines

This map supersedes 106 H in: Hanley, P.T., Hughes, O.L., Hodgson, D.A., Lawrence, D.E., Pilon, J., Zotali, S.C., and Pettapiece, W.W. 1973: Surficial geology and geomorphology of parts of the Mackenzie Valley, Fort Norman (96 C), Carcajou Canyon (96 D), Norman Wells (96 E), and Sans Sault Rapids (106 H); Geological Survey of Canada, Open File 155, scale 1:125 000

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Aiken, J.D., Cook, D.G., and Yorath, C.J. 1982: Upper Ramparts River (106 G) and Sans Sault Rapids (106 H) map areas, District of Mackenzie; Geological Survey of Canada, Memoir 388, 48 p., Map 1452A, 1453A

Hanley, P.T., Hughes, O.L., Hodgson, D.A., Lawrence, D.E., Pilon, J., Zotali, S.C., and Pettapiece, W.W. 1973: Surficial geology and geomorphology of parts of the Mackenzie Valley, Fort Norman (96 C), Carcajou Canyon (96 D), Norman Wells (96 E), and Sans Sault Rapids (106 H); Geological Survey of Canada, Open File 155, scale 1:125 000

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1993: Surficial geology, Sans Sault Rapids, District of Mackenzie, Northwest Territories; Geological Survey of Canada, Map 1784A, scale 1:250 000