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Title of article Detrital Modes of Late Precambrian-Early Paleozoic sand-
stones across Newfoundland: Implications for provenance, plate tectonic setting...

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Appendix 1

**Detrital Modes of Late Precambrian-Early Paleozoic sandstones
across Newfoundland: implications for provenance, plate
tectonic setting, and the suspect terrane hypothesis-**

A GUIDE TO SAMPLE LOCATION AND STRATIGRAPHY

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Introduction

This Appendix (separately referenced) pinpoints the location and stratigraphy of the individual sandstone samples analyzed in this study. Each of the eleven sandstone **suites** (**SUITES 1 through 11**) is discussed separately. Sample localities are shown on Figure 3, with highway or route numbers from the 1986 and 1988 versions of the Newfoundland and Labrador Official Highway Map, available from the Tourism Branch, Newfoundland and Labrador Department of Development, St. John's Newfoundland. Sample sites were picked using published field guides as well as the 1983 preliminary version of the new geological map, Geology of the Island of Newfoundland (Hibbard, 1983a).

SUITE 1. Humber Zone, autochthonous sandstones of the Labrador Group.

Sample numbers are letter-coded W (for Western Newfoundland) or WP (for Western Platform) (Inset Map A, Figure 3, 13 samples total).

W-4,5,6. Labrador Group, exposure along route 430, northwest of town of Wiltondale, 1 mile west of junction of routes 430 and 431.

W-7,8,9,10. Lower Cambrian Labrador Group (Bradore and Forteau Formations), north shore of Bonne Bay, roadcut exposure 6 miles north of Wiltondale along route 430, due east of easternmost tip of East Arm (James et al., 1988, p.88-90).

WP-30,31. Lower Cambrian Labrador Group, north shore of Bonne Bay, roadcut exposure along route 430, immediately north of East Arm.

WP-32,33,34. Lower Cambrian Labrador Group, Hawkes Bay Formation, exposure 3 mi north of town of Hawkes Bay, streambed exposure beneath route 430 bridge over East River (STOP 9, p.54-55, James et al., 1988).

WP-35. Labrador Group, exposure along route 430, east of East Arm, at Grand Barachois Creek.

SUITE 2. Humber Zone, allochthonous, westwardly-derived sandstones of Humber Arm Supergroup. Sample numbers are letter-coded NT (for Newfoundland Taconics) (Inset Map A, Figure 3, 15 samples total).

NT-3,4. Lower structural slices of mainly sedimentary flyschoidal rocks, Curling Group, allochthonous Humber Arm Supergroup, Port au

Port Peninsula, 1.75 mi west of Piccadilly Park, off route 463, West Bay (map, p.93, Poole and Rodgers, 1972).

NT-19,20,21,22. Summerside Formation (Lower Cambrian?), allochthonous Humber Arm Supergroup, along route 440, "downtown" Summerside, north shore of Humber Arm.

NT-15,16,17,18. Irishtown Formation (Lower to Middle Cambrian), allochthonous Humber Arm Supergroup, along route 440 .5 mi west of Irishtown, north shore of Humber Arm.

NT-23,24. Irishtown-Summerside exposure, along route 440, halfway between Gilliams and Meadows, north shore of Humber Arm.

NT-5,6. Irishtown Formation, allochthonous Humber Arm Supergroup, along route 450, just west of Corner Brook line in Petries, south shore of Humber Arm.

NT-7. Allochthonous Humber Arm Supergroup, along route 450 at Benois Cove, south shore of Humber Arm.

SUITE 3. Humber Zone, Blow Me Down Brook Formation, uncertain age within allochthonous Humber Arm Supergroup. Sample numbers are letter-coded NT (for Newfoundland Taconics). (Inset Map A, Figure 3, 5 samples total).

NT-10,11,12,13,14. Blow Me Down Brook Formation, Curling Group(?), along route 450, 2 mi east of town of York (James and Stevens, 1982;

Poole and Rodgers, p.85-90, 1972).

SUITE 4. Humber Zone, allochthonous, eastwardly-derived sandstones of Humber Arm Supergroup. Sample numbers are letter-coded NT (for Newfoundland Taconics). (Inset Map A, Figure 3, 7 samples total).

NT-28,29. Gadds Point Formation (Arenigian?), at ferry pier, Norris Point, north shore of Bonne Bay (STOP 8-3, p.65-67, Neale, 1972).

NT-8,9. Frenchman's Cove melange, (Middle Arm Point Formation?), 1 mi west of Frenchman's Cove, along route 450 (STOP 9-3, p.72-73, Neale, 1972).

NT-25,26,27. Lobster Cove Member, Shallow Bay Formation, Cow Head Group (Arenigian) at Lobster Cove Head, just north of Rocky Harbor exit Road along route 430 (STOP 19, p.85-88, James et al., 1988).

SUITE 5. Piedmont Zone, Fleur de Lys Supergroup, Baie Verte Peninsula. Samples numbers are letter-coded F (for Fleur de Lys Supergroup). All samples were located and stratigraphically identified using Hibbard, 1983b.(Inset Map B, Figure 3, 12 samples total).

F-2,3. Rattling Brook Group, Fleur de Lys Supergroup, along route 410 .5 mi north of junction with Coachman's Harbor road(north of town of Baie Verte).

F-5,6. Rattling Brook Group, Fleur de Lys Supergroup, along route 410

2 mi south of town of Fleur de Lys.

F-7. Rattling Brook Group, Fleur de Lys Supergroup, at junction of route 412(Seal Cove Road) and route 419 (Wild Cove Road).

F-8,9. Old House Cove Group, Fleur de Lys Supergroup, exposure along route 412 (Seal Cove Road) at western end of Osborne's Pond.

F-10,11. Old House Cove Group, at end of route 412, near pier, in town of Seal Cove.

F-12,13,14. Ming's Bight Group, Fleur de Lys Supergroup, at end of route 417 in town of Pacquet.

SUITE 6. Gander Zone, Gander Group. Sample numbers are letter-coded G (for Gander Group). (Inset Map C, Figure 3, 13 samples total).

G-2,3,4. Gander Group exposed in quarry off route 330, north of Gander and .5 mi north of entrance to Jonathan's Pond Provincial Park (STOP 5-7, p.111-112, Cawood et al., 1988).

G-6. Gander Group exposed in roadcut along Transcanada Highway at Gander International Airport exit.

G-8. Gander Group along Transcanada Highway, 3 mi east of Gander International Airport exit.

G-9,10. Gander Group along Transcanada Highway, 1.0 mi east of Benton.

G-11,12,13. Gander Group along Transcanada Highway, 2.0 mi east of Benton.

G-14. Squaw Pond Gneiss (basal Gander Group), west of Gambo along Transcanada Highway (STOP 6-1, p.131-131, Cawood et al., 1988).

G-15,16. Squaw Pond Gneiss (basal Gander Group), at town line of Gambo.

SUITE 7. Avalon Zone, Conception Bay Group. Sample numbers are letter-coded C (for Conception Bay Group). (4 of 6 sample locations are shown on general Newfoundland map, Figure 3, 6 samples total).

C-1,2,3. Upper part of Conception Bay Group, Halfway Cove, between Middle Cove and Snagge Point (STOP 1-2, p.18-19, Neale, 1972).

C-4. Lower part of Conception Bay Group, at Torbay town limit, route 20.

C-6,7. Upper part of Conception Bay Group, along route 20, 2 mi south of Shoe Cove, west of Black Head.

SUITE 8. Avalon Zone, St.John's Group. Sample numbers are letter-coded SJ (for St.John's Group). (Inset Map D, Figure 3, 3 samples total). (For general reference maps see Neale, 1972 and O'Brien et al., 1988).

SJ-2. Outer Cove Formation, St.John's Group, route 30, at Outer Cove (bridge and road junction).

SJ-5,6. St.John's Group, in St.John's, along Battery Road, 150' below Battery Inn.

SUITE 9. Avalon Zone, Signal Hill Group. Sample numbers are letter-coded SH (for Signal Hill)(Inset Map D, Figure 3, 14 samples total).

SH-3,4. Gibbet Hill Formation, Signal Hill Group, north of Torbay, along route 20 in Flat Rock area (King, 1988; Neale, 1972).

SH-5,6. Battery and/or Blackhead Formation, Signal Hill Group, Flat Rock area.

SH-7,8. Signal Hill Group, Flat Rock area (STOP 1-3, p.19-20, Neale, 1972; STOP 03, p.28-41, King, 1982).

SH-9,10,11,12. Signal Hill Group along Battery Road, 200' above Battery Inn (STOP 1-1, p.52-56, O'Brien et al., 1988).

SH-13,14. Signal Hill Group, Battery Road, near summit (King, 1982, p.31-35).

SH-15,16. Blackhead Formation, uppermost Signal Hill Group, on Cape Spear road (route 11) at Black Head.

SUITE 10. Avalon Zone, Random Formation (Tommotian-Early Cambrian). Sample numbers are letter-coded R (for Random Formation)(general map of Newfoundland, Figure 3, 6 samples total).

R-88,89,90,91. Random Formation exposed adjacent to gravel pit on hilltop on highway 109 (now 201) 3.3 mi west of Norman's Cove between Chapel Arm and Thornlea (STOP 2-2, p.52, Poole and Rodgers, 1972).

R-92,93. Random Formation, on route 201 at Thornlea town limit, along

western shore of Collier Bay.

SUITE 11. Avalon Zone, post-Random Cambrian stratigraphic units.

Sample numbers are variously letter-coded R,BC,BR, and BV (see below). (Inset map D and general map of Newfoundland, Figure 3, 12 samples total). (General reference is Landing and Benus, 1988).

R-3,4,5,6,7. Adeyton Group, along Transcanada Highway, 2 mi west of junction with route 100 (Whitbourne Road).

BV-1,2,3. Bonavista Formation (Lower Cambrian) at Bacon Cove (STOP 1, Anderson, 1987; STOP 2-5, p.66-69, King, 1988).

BC-1,2,3. Basal conglomerate of Adeyton-Harcourt Groups, Brigus Formation, valley of Manuels River (STOP 3, Anderson, 1987).

BR-2. Brigus Formation at Duffs (late Early Cambrian) (STOP 2, Anderson, 1987; STOP 2-6, p.69-71, King, 1988).

REFERENCES CITED

- Anderson, M.M., 1987, Stratigraphy of Cambrian rocks at Bacon Cove, Duffs, and Manuels River, Conception Bay, eastern Newfoundland: Geological Society of America Centennial Field Guide-Northeastern Section, p.467-472.
- Cawood, P.A., Williams, H., O'Brien, S.J., and O'Neill, P.P., 1988, Trip

- A1. Geological cross-section of the Appalachian Orogeny: Field Trip Guidebook, 1988 Geological Association of Canada/Mineralogical Association of Canada Meeting, Geological Association of Canada, Newfoundland Section, 4 Clark Place, St. John's, Newfoundland, A1B 3A6, 160 p.
- Hibbard, J., 1983a, Compiler, Geology of the Island of Newfoundland, preliminary version, Mineral Development Division, Department of Mines and Energy, Government of Newfoundland and Labrador.
- _____, 1983b, Geology of the Baie Verte Peninsula, Newfoundland: Mineral Development Division, Newfoundland Department of Mines and Energy, Memoir 2, 279 p.
- James, N.P., Knight, I., Stevens, R.K., and Barnes, C.R., 1988, Trip B1. Sedimentology and paleontology of an early Paleozoic continental margin, western Newfoundland: Field Trip Guidebook, 1988 Geological Association of Canada/Mineralogical Association of Canada Meeting, Geological Association of Canada, Newfoundland Section, 4 Clarke Place, St. John's A1B 3A6, 121 p.
- James, N.P., and Stevens, R.K., 1982, Excursion 2B: Anatomy and evolution of Lower Paleozoic continental margin, western Newfoundland: Field Trip Guidebook, Eleventh International on Sedimentology, McMaster University, 75 p.
- King, A.F., 1982, The Caledonide Orogen, IGCP Project 27, NATO

Advanced Study Institute, Atlantic Canada, August, 1982, Field Guide for Avalon and Meguma Zones: Department of Earth Sciences, Memorial University, Newfoundland, 309 p.

_____, 1988, Trip A4. Late Precambrian sedimentation and related orogenesis of the Avalon Peninsula, eastern Avalon Zone: Field Trip Guidebook, 1988 Geological Association of Canada/ Mineralogical Association of Canada Meeting, Geological Association of Canada, Newfoundland Section, 4 Clarke Place, St. John's, Newfoundland A1B 3A6, 84 p.

O'Brien, S.J., O'Neill, P.P., King, A.F., and Blackwood, R.F., 1988, Trip B4. Eastern margin of the Newfoundland Appalachians—a cross-section of the Avalon and Gander Zones: Field Trip Guidebook, 1988 Geological Association of Canada/Mineralogical Association of Canada Meeting, Geological Association of Canada, Newfoundland Section, 4 Clarke Place, St. John's, Newfoundland A1B 3A6, 126 p.

Landing, E., and Benus, A.P., 1988, Trip A3. Cambrian Depositional history and stratigraphy, Avalon-Bonavista region, southeastern Newfoundland: Field Trip Guidebook, 1988 Geological Association of Canada/ Mineralogical Association of Canada Meeting, Geological Association of Canada, Newfoundland Section, 4 Clarke Place, St. John's, Newfoundland A1B 3A6, 50 p.

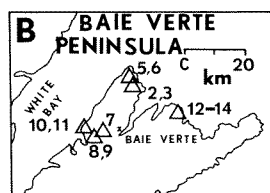
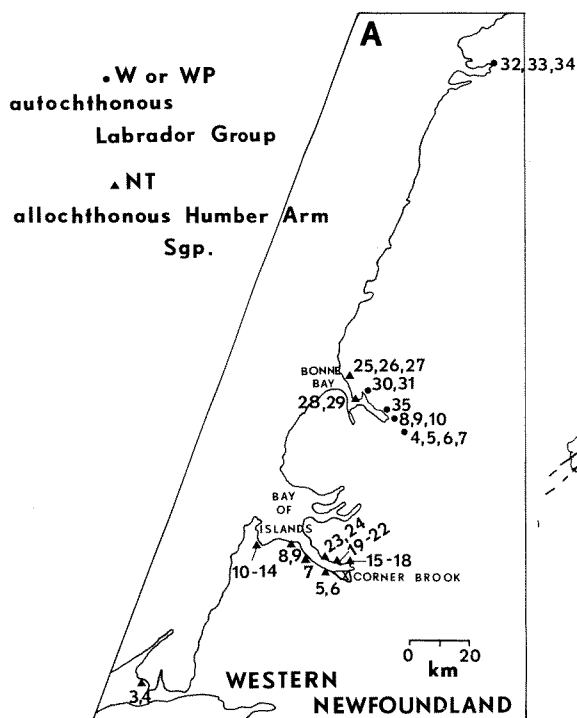
Neale, E.R.W., 1972, Excursion A62-C62, A cross section through the

Appalachian Orogen in Newfoundland, XXIV International Geological Congress Guidebook, Montreal, Quebec, 84 p.

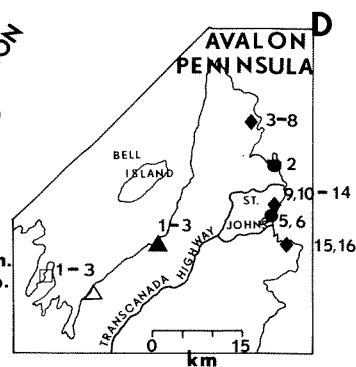
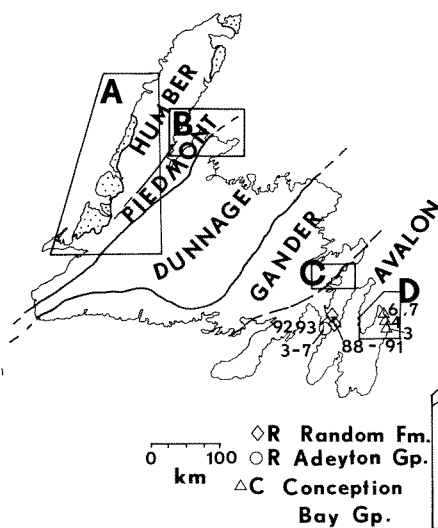
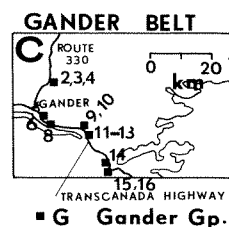
Poole, W.H., and Rodgers, J., 1972, Excursion A63-C63, Appalachian geotectonic elements of the Atlantic Provinces and southern Quebec, XXIV International Geological Congress Guidebook, Montreal, Quebec, 200 p.

Figure 3. Generalized map of Newfoundland showing major tectonostratigraphic zones and location of more detailed sample location maps. (A) Samples from western Newfoundland: solid dots-samples letter-coded W or WP(Western Newfoundland or Western Platform), autochthonous or parautochthonous Humber Arm Supergroup (13 samples); solid triangles-samples letter-coded NT (Newfoundland Taconics), allochthonous Humber Arm Supergroup(15 samples of westwardly-derived sandstones, samples NT-3-7,15-24; 5 samples of Blow Me Down Brook Fm., samples NT 10-14; 7 samples of eastwardly-derived sandstones, samples NT-8,9,25-27). (B) Baie Verte Peninsula: open triangles, 12 samples letter-coded F, Fleur de Lys Supergroup. (C) Gander Belt, 13 samples letter-coded G, Gander Group. (D) Eastern Avalon Peninsula: solid circles, 3 samples letter-coded SJ: St.John's Group; solid triangles, 14 samples letter-coded SH: Signal Hill Group; open square, 3 samples letter-coded BR of Bonavista Fm.; open triangle, 1 sample letter-coded BR of Brigus Fm.; closed triangle, 3 samples letter-coded BC, Adeyton-Harcourt Groups. General map of Newfoundland with major tectonostratigraphic zones delineated shows sampling locations for the Random Fm.(open diamonds, letter-coded R, 6 samples); Adeyton Group (open circles, letter-coded R, 5 samples), and Conception Bay Group (open triangles, letter-coded C, 4 of 6

sample localities.



△ F Fleur de Lys Sgp.



- ◆ Signal Hill Gp. (SH)
● St. John's Gp. (SJ)
□ BV Bonavista Fm. ▲ BC Adeyton-
Harcourt Gps.
△ BR Brigus Fm.