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560 NO. INDIAN ROCKS ROAD
BELLEAIR BLUFFS, FL 33540

KOMATIITIC AND IRON-RICH THOLIITIC LAVAS, MUNRO TOWNSHIP, ONTARIO

The specimen sites for this suite were identified in the field by Dr. A. J. Naldrett, University of Toronto while he was on a visit to the area he had spent so much time in to collect a suite of specimens to give to colleagues in three universities he would visit on sabatical leave (1979-80). The specimens are from well documented sections reported in the three papers listed in the references below.

The specimens cover the full range of komatittic rocks including perioditic, pyroxenititc and basaltic flows; spinifex and non-spinifex-bearing flows, and the related Theo's Flow, a tholeiitic layered peridotite-gabbro flow. An iron-rich tholeiitic flow is also included.

The figures illustrate typical sections thru peridotitic komatiite flows, one with well developed spinifex zone, the other with no spinifex. There are also flows which have a thin spinifex zone but no such flow was sampled.

The sample numbers for this suite correspond to the numbers on the figures. The very fine grained upper and lower zones (1 and 7) were difficult to collect, especially good zone 7. Hence both of these specimens are somewhat smaller than average.

Zone B_1 is normally very narrow. Hand specimens are very hard to come by, so the specimen included is very small, but collected from this unit.

Zone B_3 is not common, and is often in very massive outcrops. A small specimen is included. This zone and Zone B_1 are illustrated in the kodachrome slide set.

We think that the kodachrome slides are especially important to illustrate the distinctive features which show up on some outcrops where weathering has beautifully etched the features.

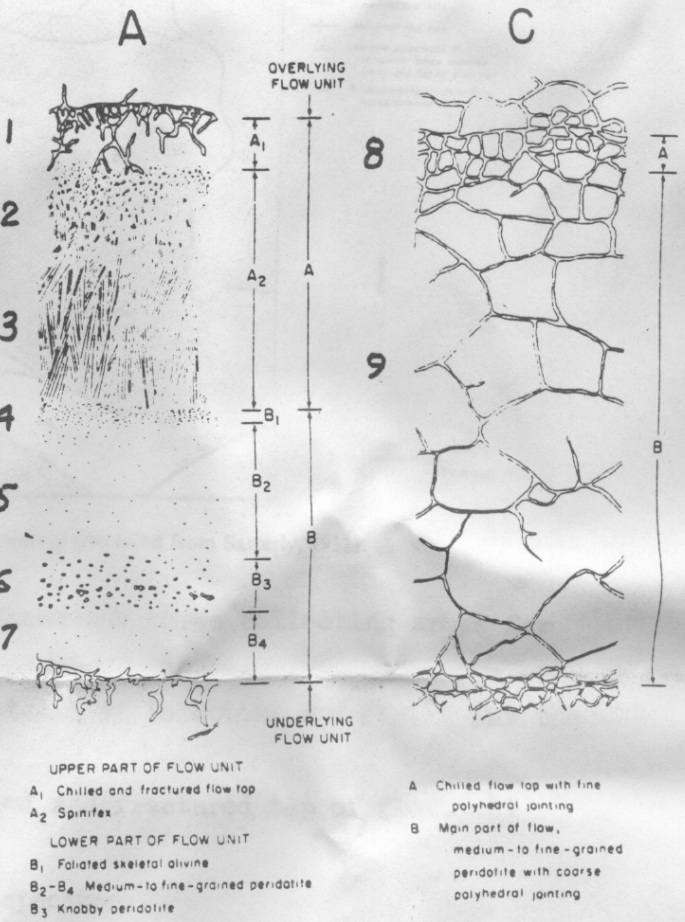

Fig 1. Fig. 7 Arndt et.al.

References:

Pyke, D. R., Naldrett, A. J., and Eckstrand, O.R., Archean Ultramafic Flows in Munro Township, Ontario. 1973, GSA Bull. v 84 p. 955-78.

Arndt, N. T., Naldrett, A. J., and Pyke, D. R., Komatiitic and Iron-rich Tholeiitic lavas of Munro Township, Northeast Ontario. 1977, Jour. Pet. v. 18, p. 319-369.

Naldrett, A. J., 1979, IN PRESS Journal of Petrology.

Specimen Locations

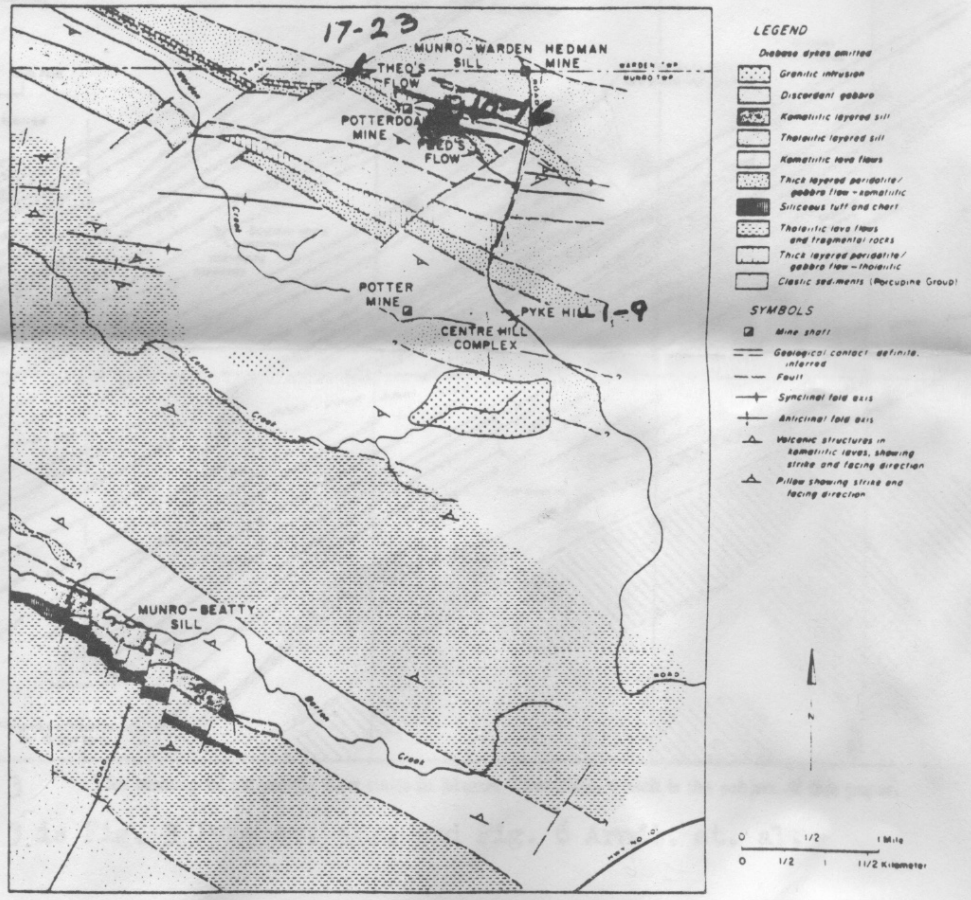

Fig. 2 Geology of Munro Township (modified from Satterly, 1951).

Fig. 2 is Fig. 2 Arndt, et. al. and shows the three collecting areas for this suite.

Pyke Hill Complex. See Fig. 3 for details of location, and Fig. 1 for the type komatiitic flows sampled.

1. Peridotitic komatiite flow. Chilled and fractured top of flow. A1
2. Fine spinifex zone A2
3. Coarse spinifex zone A2
4. Foliated spinifex B1 Very small specimen.
5. Cumulate zone B2
6. Knobby peridotite B3 Small specimen
7. Chilled base of flow B4

8. Peridotitic komatiite flow (no spinifex zone) See Fig. 3 for location on Pyke Hill. Chilled and fractured top of flow. A
9. Peridotite B

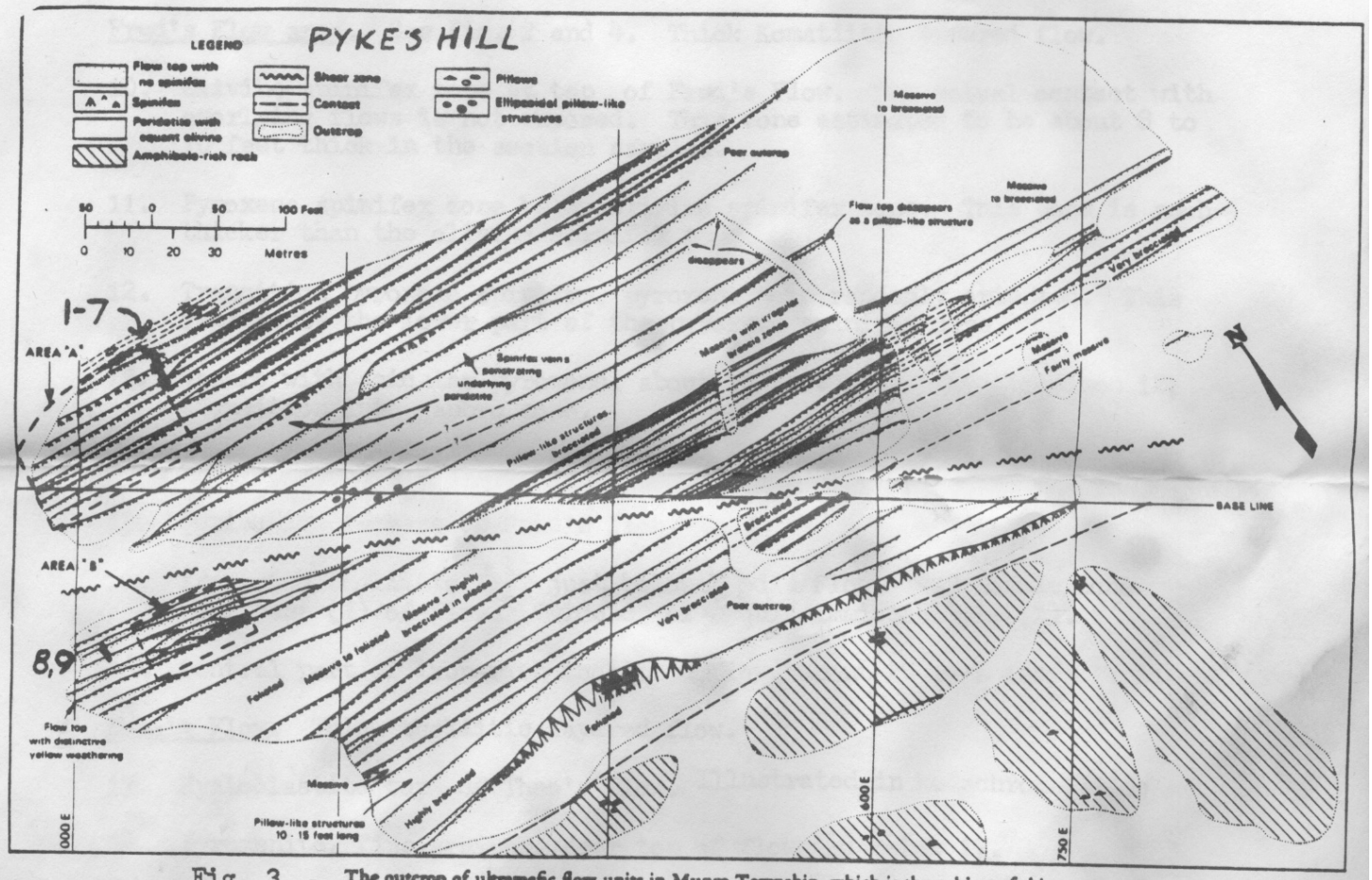

Fig. 3 **The outcrop of ultramafic flow units in Munro Township, which is the subject of this paper.**

Fig. 3 is Fig. 3 Pyke et. al., and Fig. 6 Arndt. et. al.

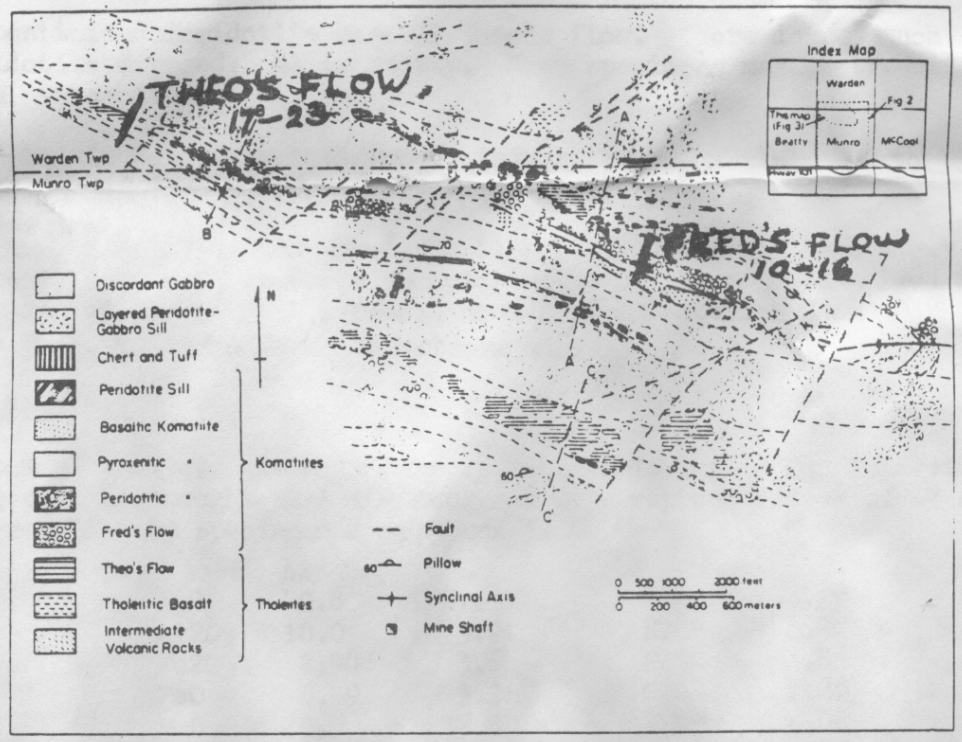

Fig. 4 Simplified geological map of the northern part of Munro Township and the southern part of Warden Township. Diabase dykes omitted.

Fig. 4 is Fig. 3 Arndt et. al.

Fred's Flow area. See Fig. 2 and 4. Thick Komatiitic layered flow.

10. Olivine spinifex zone at top of Fred's Flow. The actual contact with overlying flows is not exposed. This zone estimated to be about 8 to 10 feet thick in the section sampled.

11. Pyroxene spinifex zone below olivine spinifex zone. This zone is much thicker than the olivine spinifex zone.

12. Transition pyroxene spinifex, pyroxene more randomly oriented. This represents the lower part of the pyroxene spinifex zone.

13. Gabbro with acicular pyroxene, about 10 feet lower than specimen 12, transition into gabbro zone.

14. Gabbro

15. Peridotite at base of Fred's Flow.

16. Iron-rich tholiitic flow just below Fred's Flow. Variolitic zone near base (?) of flow. Evidence of liquid immiscibility (?).

16A Central part of iron-rich tholiitic flow, about 20 feet above variolitic zone.

Theo's Flow. Thick tholiitic layered flow.

17. Hyaloclastite top of Theo's flow. Illustrated in kodachrome slide set.

18. Pyroxenite, fine grained, near top of flow and below 17.

19. Gabbro. Relatively fine grained, with pyrite.

20. Pyroxenite near base of Fred's Flow.

21. Serpentinized peridotite base of Theo's flow. There is not much peridotite exposed. It is spotty. Some specimens may be transition from pyroxenite.

22. Pyroxenitic komatiite flow above Theo's Flow. Possibly 200 to 300 ft. specimen ... Theo's flow ... Zone B_1 are illust... the kod...

23. Basslide komatiite flow above 22. (Possibly 100 to 150 feet above 22). Bulbous or tubular features on outcrop thought to represent lava tubes. Specimen collected from freshest most massive material from a so-called lava tube. Illustrated in kodachrome slide set.

Chemical Analyses

Three chemical analyses given in Pyke et. al. Table 1 p. 973. Naldrett indicated that he thought that the analyses were representative of A2 and B2 zones represented by specimens 2 or 3 and 5.

	A2	B2		A2	B2
SiO_2	40.8	39.3	MnO	.16	.10
Al_2O_3	10.0	5.91	H_2O+	5.91	9.23
Fe_2O_3	2.94	3.68	H_2O-	.86	1.06
FeO	6.49	3.31	CO_2	.28	.31
MgO	23.3	33.9	P_2O_5	.02	.03
CaO	6.86	2.58	Cr_2O_3	.45	.29
Na_2O	.23	.20	Total	98.62	100.19
K_2O	.07	.12			
TiO_2	.25	.17			