SUPPLEMENTARY FILE

Table 1: Sm and Nd contents and Sm-Nd isotopic composition of the basaltic rocks of the Antigonish Highlands. (A) new data (B) previously published in Murphy et al. (1996).

Table 1A

Sample	Nd (ppm)	Sm (ppm)	$^{147}Sm/^{144}Nd$	$^{143}Nd/^{144}Nd$	2σ	ε_{Nd} (610)	T_{DM}	Easting	Northing
			Formation Clydesdale						
MS-2	29.75	7.238	0.1471	0.512724	4	5.50	747	5054455	571160
MS-4	14.10	3.659	0.1568	0.512730	4	4.90	852	5054095	570380
MS-11	14.01	3.273	0.1412	0.512525	4	2.10	1091	5050730	571050
MS-13	23.62	5.932	0.1518	0.512725	4	5.20	797	5050875	570945
MS-29B	7.38	2.402	0.1968	0.512985	4	6.76		5053025	569540
			Bears Brook			ε_{Nd} (460)			
GO4-6	25.56	5.687	0.1344	0.512587	5	2.67	885	535445	5030770
GO2-14	18.99	4.860	0.1547	0.512727	4	4.21	827	543760	5042310
GO3-11	29.09	6.468	0.1344	0.512542	5	1.79	968	544975	5044510
GO2-15	19.61	4.837	0.1492	0.512717	5	4.34	783	543770	5042255
GO2-CA	30.06	6.967	0.1401	0.512733	5	5.19	660	543805	5042230
GO4-CA	25.39	5.729	0.1364	0.512585	5	2.51	910	535450	5030623
			Dunn Point						
DP 1	22.19	5.427	0.1479	0.512706	5	3.64	794	564405	5067795
DP 2	21.65	5.266	0.1471	0.512692	4	3.40	815	564410	5067805
DP 3	17.31	4.057	0.1417	0.512678	5	3.38	786	564725	5067790
DP 4	24.35	5.606	0.1392	0.512656	4	3.07	803	564805	5067810
			McArras Brook			ε_{Nd} (370)			
MCA 1	22.64	5.428	0.1449	0.512698	6	3.62	779	561205	5064755
MCA 2	24.86	5.793	0.1409	0.512646	4	2.80	840	561200	5064750
MCA 3	43.69	8.834	0.1222	0.512588	4	2.55	769	561210	5064610
MCA 4	43.70	8.875	0.1228	0.512565	5	2.07	811	561155	5064555
MCA 5	43.66	8.819	0.1221	0.512569	4	2.18	798	560995	5064450
MCA 6	38.66	7.628	0.1193	0.512569	4	2.31	776	560955	5064225
MCA 7	14.14	3.535	0.1512	0.512686	4	3.09	880	560840	5064205
MCA 8	16.40	3.922	0.1446	0.512644	4	2.58	889	560805	5064170

Sm-Nd analytical methods for data in Table 1A

Chemical separations and isotopic analyses were determined at the Atlantic Universities Regional Isotopic Facility (AURIF), Memorial University of Newfoundland. Approximately 0.1 g of rock power was dissolved in Savillex vials using a mixture of concentrate HF – HNO_3 acids. A mixed $^{150}Nd/^{149}Sm$ spike was added to each sample prior to acid digestion. After five days of digestion, solution was evaporated to dryness and then taken up in 6 N HCl acid for two days. The solution was then dried and taken up in 2.5N HCl and loaded on cationic exchange

chromatography columns using AG50W – X8 resin. The REE fraction was then purified and Sm and Nd were isolated using a secondary column loaded with Eichrom Ln resin. All reagents were distillate in order to insure a low contamination level. The measured total chemical blanks range between 40 and 90 pg.

Sm and Nd contents and Nd isotopic composition were analyzed using a multicollector Finnigan Mat 262 mass spectrometer in static mode. Nd isotopic ratios are normalized to $^{146}Nd/^{144}Nd = 0.7219$. The reported values were adjusted to La Jolla Nd standard ($^{143}Nd/^{144}Nd = 0.511860$). During the course of data acquisition replicates of the standard gave a mean value of $^{143}Nd/^{144}Nd = 0.511888 \pm 16$ ($2\sigma m$, n=12). The in-run precision on Nd isotopic ratios are given at 95% confidence level. Error on Nd isotopic compositions are <0.002% and errors on the $^{147}Sm/^{144}Nd$ ratio are estimated to be less than 0.1%. The $^{143}Nd/^{144}$ Nd ratios are measured by thermal ionization mass spectrometry, after chemical separation of Nd from Sm and other REE by ion-exchange chemistry. εNd values are relative to ^{143} Nd/$^{144}Nd = 0.512638$ and $^{147}Sm/^{144}Nd = 0.196593$ for present day CHUR (Jacobsen and Wasserburg 1980) and lamda ^{147} Sm = 6.54×10^{-12}/year (Steiger and Jäger, 1977). $T_{(DM)}$ are calculated using the model of DePaolo (1981, 1988). Epsilon values at time T are calculated using:

$$\varepsilon_{Nd}^{T} = [(\ ^{143}Nd/^{144}Nd_{sample}^{T} / \ ^{143}Nd/^{144}Nd_{CHUR}^{T})-1] * 10000$$

where CHUR is the Chondrite Uniform Reservoir and T is the time the rock was formed. Depleted mantle model ages are calculated assuming a modern upper mantle with $^{147}Sm/^{144}Nd = 0.214$ and $^{143}Nd/^{144}Nd = 0.513115$. ε_{Nd} values are calculated for the respective crystallization ages (t = 610 Ma, Clydesdale Formation; t = 530 Ma, Arbuckle Brook Formation, t = 460 Ma, Dunn Point/Bears Brook formations; t = 370 Ma McArras Brook Formation).

Table 1B

Sample	Nd ppm)	Sm (ppm)	$^{147}Sm/^{144}Nd$	$^{143}Nd/^{144}Nd$	2σ	ε_{Nd} (610)	T_{DM}	Easting	Northing
			Clydesdale Formation						
E09 145	35.85	9.24	0.156	0.51270	3	4.46	1107	570670	5056825
E09 163	27.13	6.94	0.155	0.51269	3	4.20	1114	571585	5055960
			Arbuckle Brook			ε_{Nd} (530)			
E16 375	58.83	10.91	0.112	0.51255	3	4.01	851	568910	5068190
E16 376	51.91	10.47	0.122	0.51257	3	3.70	911	568915	5068185
			Bears Brook			ε_{Nd} (460)			
GO2	24.55	6.15	0.152	0.51273	5	4.43	960	543925	5042175
GO2-12	44.69	11.49	0.155	0.51278	5	5.23	878	543940	5042150

Sm-Nd analytical methods for data in Table 1B

These data are previously published in Murphy et al., 1996. Chemical separations and isotopic analyses were determined at Carleton University, Ottawa, Ontario. Between 100 and 300 mg of sample powder were weighed into a screw-cap Teflon vial, to which a mixed ^{148}Nd-^{149}Sm spike was added. The powder-spike mixture was dissolved in HNO_3-HF, then further attacked with HNO_3 and HCl until no residue was visible. The bulk REE were separated using cation chromatography with 2.5N HCl (Dowex 50-X8). The REE-bearing residue was dissolved in 0.26N HCl and loaded into a 10-ml borosilicate glass chromatographic column containing a 2

cm-high bed of Teflon powder coated with HDEHP [di(2-ethylhexyl) orthophosphoric acid (Richard et al., 1976). Nd was eluted using 0.26N HCl, followed by Sm in 0.5N HCl.

Total procedural blanks for Nd are < 300 picograms. Concentrations are precise to ± 1%, but $^{147}Sm/^{144}Nd$ ratios are reproducible to 0.5%. Samples were loaded with 0.3N H_3PO_4 on one side of a Re double filament assembly, and ran at temperatures of 1780-1820°C in a 5-cup Finnigan MAT261 multicollector mass spectrometer. Isotope ratios were normalized to $^{146}Nd/^{144}Nd = 0.72190$. Analyses of the USGS standard BCR-1 yield Nd = 29.02 ppm, Sm = 6.68 ppm, and $^{143}Nd/^{144}Nd = 0.512668 \pm 20$ (n=4). Over 70 runs of the La Jolla standard average $^{143}Nd/^{144}Nd = 0.511876 \pm 18$ (Sept. 1992-March 2000). Epsilon values at time T are calculated using the following relation:

$$\varepsilon_{Nd}^{T} = [({}^{143}Nd/^{144}Nd_{sample}^{T} / {}^{143}Nd/^{144}Nd_{CHUR}^{T})-1] * 10000$$

where CHUR is the Chondrite Uniform Reservoir and T is the time the rock was formed. Depleted mantle model ages are calculated assuming a modern upper mantle with $^{147}Sm/^{144}Nd = 0.214$ and $^{143}Nd/^{144}Nd = 0.513115$. ε_{Nd} values are calculated for the respective crystallization ages (t = 610 Ma, Clydesdale Formation; t = 530 Ma, Arbuckle Brook Formation, t = 460 Ma, Bears Brook formations).

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