This Supplemental Material accompanies
White, C.E., Barr, S.M., Crowley, J.L., van Rooyen, D., and MacHattie, T.G., 2022, U-Pb zircon ages and Sm-Nd isotopic data from the Cobequid Highlands, Nova Scotia, Canada: New contributions to understanding the Neoproterozoic geologic history of Avalonia, *in* Kuiper, Y.D., Murphy, J.B., Nance, R.D., Strachan, R.A., and Thompson, M.D., eds., New Developments in the Appalachian-Caledonian-Variscan Orogen: Geological Society of America Special Paper 554, https://doi.org/10.1130/2021.2554(07).

Supplemental Material S3 – SM-ND ISOTOPIC ANALYSIS METHODS

Samples were analyzed at either Memorial University, St. John's, Canada, or Carleton University, Ottawa, Canada. At Memorial University, samples are weighed into Savilex© Teflon capsules and then spiked with a mixed $^{150}Nd/^{149}Sm$ spike before being dissolved using an 8 ml (4:1) mixture of 29 M HF – 15 M HNO_3. After five days of acid digestion on a hotplate, the solution is then evaporated to dryness and taken back up in 6M HCl for 4-5 days. The sample is finally dried down and then re-dissolved in 2.5 M HCL. Samples are then loaded into a column containing cation exchange resin AG-50W-X8, H+ form, 200-400 mesh where a Sr fraction can be isolated followed by collection of bulk rare earth elements (REE). This bulk solution is then dried and taken up in 0.18 M HCl and loaded on a second column containing Eichrom© Ln resin (50-100 mesh) to isolate Sm and Nd separately from the other REE. All reagents are purified in order to ensure a low contamination level. Sm and Nd concentrations and isotopic compositions are determined using a multi-collector Finnigan Mat 262 mass spectrometer in static mode for concentration determination, and dynamic mode for isotopic composition determination. Instrumental mass fractionation of Sm and Nd isotopes are corrected using a Raleigh law relative to $^{146}Nd/^{144}Nd = 0.7219$ and $^{152}Sm/^{147}Sm = 1.783$. The reported values were adjusted to La Jolla Nd standard ($^{143}Nd/^{144}Nd = 0.511860$). The in-run precisions on Nd isotopic ratio 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%.

At Carleton University, REE fractions are dissolved in 0.26N HCl and loaded onto Eichrom Ln Resin chromatographic columns containing Teflon powder coated with HDEHP [di(2-ethylhexyl) orthophosphoric acid]. Nd is eluted using 0.26N HCl, followed by Sm in 0.5N HCl. Total procedural blanks for Nd are < 50 picograms; < 6 picograms for Sm. Samples > 250 Ma are spiked with a mixed ^{148}Nd-^{149}Sm spike prior to dissolution. Concentrations are precise to +/- 1%, while $1^{47}Sm/^{144}Nd$ ratios are reproducible to 0.5%. Samples are loaded with H_3PO_4 on one side of a Re double filament and run at temperatures of 1700-1800 ºC. Isotope ratios are 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 $^{143}Nd/^{144}Nd = 0.512668$ +/- 20 (n=4). The international La Jolla standard and an internal lab standard were used to monitor results.

For both data sources, the εNd values were calculated using $^{147}Sm/^{144}Nd = 0.1967$; $^{143}Nd/^{144}Nd = 0.512638$ (present-day chondritic uniform reservoir, CHUR), and a ^{147}Sm decay constant of 6.54x10-12a-1 (Steiger and Jäger 1977). Depleted mantle model ages, TDM2, were calculated following single stage model of Goldstein et al. (1984).

REFERENCES CITED:

Goldstein, S.L., O'Nions, R.K., and Hamilton, P.J., 1984, A Sm–Nd isotopic study of atmospheric dusts and particulates from major river systems: Earth and Planetary Science Letters, v. 70, p. 221–236.

Steiger, R.H., and Jäger, E., 1977, Subcommission on geochronology: convention on the use of decay constants in geo- and cosmochronology: Earth and Planetary Science Letters, v. 36, p. 359–362.