**Table 1.** Analytical Methods at LDEO. Samples were corrected using the pooled average of all procedural blanks analyzed during processing of RR1814-15 dissolved samples. The average procedural blanks for <sup>232</sup>Th, <sup>230</sup>Th, and <sup>231</sup>Pa are shown in the table below. The limit of detection (LOD) is the smallest quantity of each isotope in samples that can reliably be detected or that can be statistically distinguished from a procedural blank. The LOD was considered to be 2 standard deviations above the average of the procedural blanks.

Further details on analysis of seawater dissolved radionuclides are given by Anderson et al. (2012).

LDEO	Th-232 (pg)	Th-230 (fg)	Pa-231 (fg)
Procedural blanks (n =	$3.92 \pm 4.19$	$0.15 \pm 0.15$	$0.07 \pm 0.09$
23, mean $\pm$ 2 sigma)			
	Th-232 (pg/kg)	Th-230 (fg/kg)	Pa-231 (fg/kg)
Limit of Detection	1.6	0.06	0.039
Standard reference material	Th-232 (pg/g)	Th-230 (fg/g)	Pa-231 (fg/g)
SWS10-1 cubitainer (n = 14, mean ± 1 sigma)	$1073 \pm 23$	254 ± 1	$37 \pm 1$
SWS10-1 teflon vial (n = 16, mean $\pm$ 1 sigma)	1042 ± 17	$254 \pm 3$	37 ± 1