TABLE 1. ANALYTICAL CONFIGURATION FOR MONAZITE ANALYSIS

EL	X-ray line	Crystal	BKG1	BKG2	Count time (s.)	Standard
Major element analysis (15 KV, 15 nA)						
Si	$K\alpha$	TAP	500	-500	20	Labradorite
P	$K\alpha$	PET	500	-500	20	Apatite
Ca	$K\alpha$	PET	500	-500	20	Apatite
Th	$M\alpha_1$	PET	700	-1000	20	ThO_2
Y	$L\alpha_1$	PET	900	-700	20	Y-Al-Garnet
Ce	$L\alpha_1$	LIF	1000	-1000	20	$CePO_4$
La	$L\alpha_1$	LIF	600	-600	20	$LaPO_4$
Nd	$L\alpha_1$	LIF	600	-1000	20	$NdPO_4$
Pr	$L\beta_1$	LIF	600	-1000	20	$PrPO_4$
Sm	$L\beta_1$	LIF	400	-400	20	$SmPO_4$
Gd	$L\beta_2$	LIF	600	-1100	20	Gd
Trace element analysis (15 KV, 200 nA)						
Th	$M\alpha_1$	PET	700	-1000	600	ThO_2
Pb	$M\alpha_1$	PET	1200	-1000	600	Pyromorphite
U	$M\beta$	PET	1000	-1000	600	UO_2

Note: BKG1 and BKG2 are upper and lower background offset positions relative to the peak position (in sine theta units).

TABLE 2. MONAZITE ANALYSES AND MICROPROBE AGES

	Canada W96-19b		NM JB54b	Norway MTUHP1	
	rim	core	all	core	rim
Oxides (wt%)					
P_2O_5	29.74	30.58	30.61	30.17	30.29
SiO_2	0.39	0.19	0.24	0.29	0.23
ThO_2	6.52	1.50	2.78	4.70	3.25
Y_2O_3	0.53	1.53	0.64	0.42	0.17
La_2O_3	14.71	14.53	14.68	14.37	15.04
Ce_2O_3	29.93	31.52	29.36	29.75	30.17
Pr_2O_3	2.97	3.06	3.20	3.09	3.55
Nd_2O_3	10.90	12.03	13.37	12.52	13.24
Sm_2O_3	1.59	1.58	2.06	1.90	1.85
Gd_2O_3	2.85	1.99	2.16	2.13	1.72
CaO	1.47	0.44	0.52	0.95	0.70
Total	101.60	98.95	99.63	100.29	100.21
Cations					
P	0.978	1.008	1.007	0.998	1.002
Si	0.015	0.008	0.009	0.011	0.009
Th	0.058	0.013	0.025	0.042	0.029
Y	0.011	0.032	0.013	0.009	0.003
La	0.211	0.209	0.210	0.207	0.217
Ce	0.426	0.449	0.418	0.426	0.432
Pr	0.042	0.043	0.045	0.044	0.051
Nd	0.151	0.167	0.186	0.175	0.185
Sm	0.021	0.021	0.028	0.027	0.026
Gd	0.037	0.026	0.028	0.028	0.022
Ca	0.061	0.018	0.022	0.040	0.029
Total	2.011	1.994	1.991	0.969	0.974
Microprobe Ages					
N. Analyses:	4	4	23	8	10
Th (ppm)	60,608	10,281	25,310	37,739	35,795
U (ppm)	3,883	2,646	3,882	2,853	3,238
Pb (ppm)	6,587	1,910	2,523	2,280	840
Age (m.y.)	1,888	2,022	1,408	1,054	405
Std.Dev.	8	30	24	17	10

Note: Microprobe ages are averages from individual age domains on calculated age maps (see text for discussion).