

William L. Robison
Lawrence Livermore Nati'l Lab.
P.O. Box 5507
Livermore, CA94550

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William L. Robison
Lawrence Livermore Nat'l Lab.
P.O. Box 5507
Livermore, CA94550

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(Signature of certifying official)

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APPENDIX B

RADIONUCLIDE CONCENTRATIONS IN SOIL AT THE
NORTHERN MARSHALL ISLANDS

Table B-1. Average ¹³⁷Cs soil concentrations from the Northern Marshall Islands survey.

Atoll and island	Number of samples	¹³⁷ Cs (pCi/g dry weight of soil)			
		0 to 5 cm	0 to 15 cm	0 to 25 cm	0 to 40 cm
Likiep (L) ^a					
Agony (45) ^b	3	1	0.6	0.39	0.26
Kapenor (55)	6	0.65	0.32	0.21	0.15
Jeltonet (13)	3	0.34	0.18	0.12	0.088
Likiep (37)	12	0.65	0.35	0.24	0.17
Rikuraru (2)	12	1	0.5	0.34	0.24
Etoile (47)	4	0.43	0.33	0.26	0.19
Mejit (R)					
Mejit (1)	8	0.56	0.33	0.22	0.15
Ailuk (A)					
Enijabro (2)	4	0.64	0.37	0.25	0.18
Enejelar (4)	5	0.98	0.57	0.38	0.26
Bigen (7)	4	0.48	0.26	0.17	0.11
Agulue (53)	7	0.63	0.34	0.22	0.15
Aliet (20)	4	1.3	0.75	0.48	0.31
Ailuk (51)	13	0.6	0.35	0.25	0.18
Bererjao (33)	4	0.7	0.32	0.21	0.14
Kapen (1)	4	0.7	0.32	0.21	0.14
Utirik (I)					
Aon (8)	10	2.6	1.5	0.99	0.65
Pigowak (3)	8	4.4	2.7	1.8	1.1
Utirik (6)	28	2.4	1.4	0.96	0.66
Wotho (M)					
Medyeron (1)	8	1.4	0.62	0.4	0.29
Wotho (4)	15	0.37	0.25	0.17	0.12
Kabben (17)	6	0.16	0.14	0.11	0.079
Ujelang (J)					
Ennimenetto (23)	5	0.44	0.43	0.39	0.22
Burle (20)	3	0.83	0.51	0.37	0.22
Eimnlapp (22)	4	0.9	0.58	0.42	0.29

Table B-1. (Continued)

Atoll and island	Number of samples	¹³⁷ Cs (pCi/g dry weight of soil)			
		0 to 5 cm	0 to 15 cm	0 to 25 cm	0 to 40 cm
Ujelang (J) (continued)					
Kalo (25)	5	0.19	0.21	0.17	0.14
Daisu (17)	6	0.3	0.16	0.11	0.084
Pokon (5)	3	0.14	0.078	0.06	0.069
Ujelang (18)	24	0.51	0.35	0.26	0.2
Taka (H)					
Taka (4)	8	1.1	0.76	0.56	0.39
Eluk (5)	1	0.53	0.24	0.22	0.20
Rongelap (F)					
Borukka (49)	3	36	18	12	7.3
Kabelle (13)	5	40	20	16	11
Eniaetok (33)	6	7	9.4	6.4	4.3
Lomuilal (7)	4	36	42	32	22
Yugui (5)	1	170	73	46	30
Rongelap (42)	27	15	9.8	6.9	5
Mellu (23)	4	71	43	30	24
Arbar (43)	6	12	9.3	6.3	5
Naen (1)	7	95	68	45	29
Rongerik (G)					
Eniwetak (11)	11	6.5	4.2	3	2.2
Bigonattam (5)	2	8.6	5.1	3.4	2.2
Jedibberdib (1)	1	7	5.6	3.9	2.5
Latoback (2)	4	16	9.8	6.4	4.3
Bock (12)	2	1.8	2.2	1.9	1.3
Rongerik (6)	7	33	17	11	7.2
Bikar (D)					
Jaboerukku (1)	4	0.35	0.19	0.16	0.11
Arumenii (2)	1	0.23	0.17	0.12	0.093
Bikar (4)	2	0.43	0.43	0.44	0.33

Table B-1. (Continued)

Atoll and island	Number of samples	¹³⁷ Cs (pCi/g dry weight of soil)			
		0 to 5 cm	0 to 15 cm	0 to 25 cm	0 to 40 cm
Jemo (S)					
Jemo (1)	3	0.33	< 0.27	< 0.27	< 0.11
Ailinginae (C)					
Ucchuwanen (15)	2	11	5.4	3.6	2.6
Knox (10)	3	17	9	5.8	3.8
Mogiri (24)	6	6.1	4.4	3.2	2.3
Sifo (27)	6	1.4	1.2	0.82	0.56
Ribinouri (19)	4	5.4	3.8	2.6	1.8
Enibuk (17)	9	4.4	2.9	2.2	1.7
Manchinikson (25)	3	6.1	7	5.3	3.5
Kuobuen (18)	3	6	3.9	2.7	1.8
Majokoryaan (8)	2	3.4	1.7	1.3	0.94

^a Code letter for atoll.

^b Code number for island.

Table B-2. Average ^{90}Sr soil concentrations from the Northern Marshall Islands survey.

Atoll and island	Number of samples	^{90}Sr (pCi/g dry weight of soil)			
		0 to 5 cm	0 to 15 cm	0 to 25 cm	0 to 40 cm
Likiep (L) ^a					
Agony (45) ^b	3	0.2	0.21	0.21	0.14
Kapenor (55)	6	0.22	--	--	--
Jeltonet (13)	3	0.16	--	--	--
Likiep (37)	12	0.26	0.19	0.15	0.11
Rikuraru (2)	--	--	--	--	--
Etoile (47)	3	0.18	0.16	0.15	0.11
Mejit (R)					
Mejit (1)	8	0.31	0.27	0.24	0.18
Ailuk (A)					
Enjabro (2)	--	--	--	--	--
Enejelar (4)	--	--	--	--	--
Bigen (7)	--	--	--	--	--
Agulue (53)	7	0.26	0.20	0.17	0.13
Aliet (20)	4	0.43	0.36	0.28	0.20
Ailuk (51)	13	0.26	0.29	0.24	0.18
Bererjao (33)	4	0.37	0.26	0.2	0.15
Kapen (1)	--	--	--	--	--
Utirik (I)					
Aon (8)	--	--	--	--	--
Pigowak (3)	--	--	--	--	--
Utirik (6)	18	1.4	1.1	0.82	0.59
Wotho (M)					
Medyeron (1)	5	0.37	0.36	0.33	0.35
Wotho (4)	3	0.14	0.097	0.077	0.057
Kabben (17)	5	0.09	0.09	0.08	0.06
Ujelang (J)					
Ennimenetto (23)	5	0.24	--	--	--
Burle (20)	3	0.2	--	--	--
Eimnlapp (22)	4	0.44	--	--	--

Table B-2. (Continued)

Atoll and island	Number of samples	⁹⁰ Sr (pCi/g dry weight of soil)			
		0 to 5 cm	0 to 15 cm	0 to 25 cm	0 to 40 cm
Ujelang (J) (continued)					
Kalo (25)	5	0.12	1.2	0.77	0.50
Daisu (17)	6	0.12	--	--	--
Pokon (5)	3	0.12	--	--	--
Ujelang (18)	23	0.2	0.16	0.14	0.11
Taka (H)					
Taka (4)	8	1.19	0.85	0.58	0.43
Eluk (5)	1	0.21	--	--	--
Rongelap (F)					
Borukka (49)	3	17	12	--	--
Kabelle (13)	5	46	29	24	17
Eniaetok (33)	6	9.5	10	8.2	8.3
Lomuillal (7)	4	95	66	49	35
Yugui (5)	1	46	30	20	14
Rongelap (42)	20	6.9	7.1	6.1	4.6
Mellu (23)	4	45	36	27	21
Arbar (43)	--	--	--	--	--
Naen (1)	7	150	110	77	53
Rongerik (G)					
Eniwetak (11)	8	5.8	5.2	3.8	--
Bigonattam (5)	--	--	--	--	--
Jedibberdib (1)	--	--	--	--	--
Latoback (2)	--	--	--	--	--
Bock (12)	1	4.6	4.7	4.2	3.3
Rongerik (6)	2	30	17	12	8.5
Bikar (D)					
Jaboerukku (1)	4	6.8	--	--	--
Arumenii (2)	1	2.2	--	--	--
Bikar (4)	2	0.87	--	--	--

Table B-2. (Continued)

Atoll and island	Number of samples	⁹⁰ Sr (pCi/g dry weight of soil)			
		0 to 5 cm	0 to 15 cm	0 to 25 cm	0 to 40 cm
Jemo (S)					
Jemo (1)	--	--	--	--	--
Ailinginae (C)					
Uchuwanen (15)	2	5.9	--	--	--
Knox (10)	3	5.9	--	--	--
Mogiri (24)	6	4.9	3.6	2.4	1.7
Sifo (27)	4	1.5	--	--	--
Ribinouri (19)	2	3.2	2.7	1.9	1.3
Enibuk (23)	9	4.6	--	--	--
Manchinikson (25)	3	2.8	--	--	--
Kuobuen (18)	3	6.9	2.9	1.9	1.3
Majokoryaan (8)	2	7.7	--	--	--

^a Code letter for atoll.

^b Code number for island.

Table B-3. Average $^{239+240}\text{Pu}$ soil concentrations from the Northern Marshall Islands survey.

Atoll and island	Number of samples	$^{239+240}\text{Pu}$ (pCi/g dry weight of soil)			
		0 to 5 cm	0 to 15 cm	0 to 25 cm	0 to 40 cm
Likiep (L)					
Agony (45)	3	0.041	0.029	0.019	0.012
Kapenor (55)	--	--	--	--	--
Jeltonet (13)	--	--	--	--	--
Likiep (37)	5	0.054	0.033	0.022	0.014
Rikuraru (2)	--	--	--	--	--
Etoile (47)	3	0.034	0.029	0.022	0.015
Mejit (R)					
Mejit (1)	8	0.06	0.03	0.03	0.02
Ailuk (A)					
Enjabro (2)	1	--	--	--	--
Enejelar (4)	5	--	--	--	--
Bigen (7)	3	--	--	--	--
Agulue (53)	7	0.069	0.036	0.023	0.014
Aliet (20)	1	0.17	0.074	0.045	0.029
Ailuk (51)	13	0.098	0.059	0.038	0.024
Bererjao (33)	4	0.12	0.067	0.041	0.027
Kapen (1)	--	--	--	--	--
Utirik (I)					
Aon (8)	--	--	--	--	--
Pigowak (3)	--	--	--	--	--
Utirik (6)	16	0.51	0.3	0.18	0.12
Wotho (M)					
Medyeron (1)	8	0.072	0.035	0.023	0.015
Wotho (4)	9	0.031	0.016	0.010	0.0066
Kabben (17)	5	0.02	0.01	0.01	0.005
Ujelang (3)					
Ennimenetto (23)	--	--	--	--	--
Burle (20)	--	--	--	--	--
Eimnlapp (22)	--	--	--	--	--

Table B-3. (Continued)

Atoll and island	Number of samples	$^{239+240}\text{Pu}$ (pCi/g dry weight of soil)			
		0 to 5 cm	0 to 15 cm	0 to 25 cm	0 to 40 cm
Ujelang (I) (continued)					
Kalo (25)	5	0.032	0.035	0.027	0.019
Daisu (17)	--	--	--	--	--
Pokon (5)	--	--	--	--	--
Ujelang (18)	14	0.04	0.028	0.019	0.013
Taka (H)					
Taka (4)	8	0.12	0.067	0.044	0.029
Eluk (5)	1	0.08	--	--	--
Rongelap (F)					
Borukka (49)	3	7.2	2.8	--	--
Kabelle (13)	5	14	6.95	5.31	3.59
Eniaetok (33)	6	2	2.6	2.3	1.4
Lomuila (7)	4	19	13	8.6	5.5
Yugui (5)	1	14.91	5.94	3.66	2.3
Rongelap (42)	18	3.2	2.1	1.4	0.89
Mellu (23)	4	14	7.0	4.4	3.5
Arbar (43)	43	--	--	--	--
Naen (1)	7	29	20	13	8.4
Rongerik (G)					
Eniwetak (11)	8	2.5	1.4	0.87	--
Rigonattam (5)	--	--	--	--	--
Jedibberdib (1)	--	--	--	--	--
Latoback (2)	--	--	--	--	--
Bock (12)	1	0.49	0.66	0.66	0.44
Rongerik (6)	2	2.3	1.2	0.8	0.51
Bikar (D)					
Jaboerukku (1)	4	5.1	--	--	--
Arumenii (2)	1	2.1	--	--	--
Bikar (4)	2	0.045	--	--	--

Table B-3. (Continued)

Atoll and island	Number of samples	$^{239+240}\text{Pu}$ (pCi/g dry weight of soil)			
		0 to 5 cm	0 to 15 cm	0 to 25 cm	0 to 40 cm
Jemo (S)					
Jemo (1)	--	--	--	--	--
Ailinginae (C)					
Ucchuwanen (15)	2	4.5	--	--	--
Knox (10)	3	2.7	--	--	--
Mogiri (24)	6	0.98	0.55	0.35	0.23
Sifo (27)	6	0.39	--	--	--
Ribinouri (19)	4	0.79	0.82	0.54	0.35
Enibuk (23)	9	2.4	--	--	--
Manchinikson (25)	3	1.1	--	--	--
Kuobuen (18)	3	1.3	--	--	--
Majokoryaan (8)	2	3.7	--	--	--

^a Code letter for atoll.

^b Code number for island.

Table B-4. Average ^{241}Am soil concentrations from the Northern Marshall Islands survey.

Atoll and island	Number of samples	^{241}Am (pCi/g dry weight of soil)			
		0 to 5 cm	0 to 15 cm	0 to 25 cm	0 to 40 cm
Likiep (L) ^a					
Agony (45) ^b	3	0.018	0.013	0.0088	0.0056
Kapenor (55)	1	0.017	0.0081	0.0052	0.0034
Jeltonet (13)	3	--	--	--	--
Likiep (37)	5	0.031	0.019	0.013	0.0084
Rikuraru (2)	3	<0.021	<0.040	<0.037	<0.037
Etoile (47)	3	0.016	0.011	0.0075	0.0047
Mejit (R)					
Mejit (1)	6	0.036	0.021	0.014	0.0095
Ailuk (A)					
Enijabro (2)	--	--	--	--	--
Enejelar (4)	5	0.039	0.032	0.021	0.014
Bigen (7)	4	--	--	--	--
Agulue (53)	7	0.033	0.018	0.012	0.0074
Aliet (20)	2	0.014	0.012	0.0078	0.005
Ailuk (51)	12	0.060	0.028	0.018	0.012
Bererjao (33)	2	0.068	0.042	0.026	0.016
Kapen (1)	--	--	--	--	--
Utirik (I)					
Aon (8)	11	0.25	--	--	--
Pigowak (3)	1	0.12	0.086	0.06	--
Utirik (6)	26	0.24	0.14	0.093	0.067
Wotho (M)					
Medyeron (1)	4	0.061	0.039	0.034	0.022
Wotho (4)	10	0.037	0.034	0.044	0.042
Kabben (17)	5	0.0067	0.007	0.0053	0.0036
Ujelang (J)					
Ennimenetto (23)	4	0.047	--	--	--
Burle (20)	2	0.019	--	--	--
Eimnlapp (22)	3	0.069	--	--	--

Table B-4. (Continued)

Atoll and island	Number of samples	²⁴¹ Am (pCi/g dry weight of soil)			
		0 to 5 cm	0 to 15 cm	0 to 25 cm	0 to 40 cm
Ujelang (J) (continued)					
Kalo (25)	5	0.011	0.0091	0.0080	--
Daisu (17)	6	0.031	0.045	0.052	0.055
Pokon (5)	2	0.0087	--	--	--
Ujelang (18)	18	0.013	0.0095	0.028	0.018
Taka (H)					
Taka (4)	8	0.12	0.071	0.044	0.029
Eluk (5)	1	0.15	--	--	--
Rongelap (F)					
Borukka (49)	3	2.6	1.1	--	--
Kabelle (13)	2	6.7	2.5	1.7	1.2
Eniaetok (33)	5	0.71	1.1	0.74	0.47
Lomuilal (7)	2	5	6.6	4.8	3.1
Yugui (5)	1	6.5	2.8	1.7	1.1
Rongelap (42)	17	1	0.73	0.51	0.35
Mellu (23)	2	5.8	3.1	2	1.4
Arbar (43)	1	3.8	--	--	--
Naen (1)	6	13	8.7	5.6	3.7
Rongerik (G)					
Eniwetak (11)	4	1.2	--	--	--
Bigonattam (5)	--	--	--	--	--
Jedibberdib (1)	1	1.9	--	--	--
Latoack (2)	2	1.5	0.74	0.48	--
Rock (12)	1	0.44	--	--	--
Rongerik (6)	2	4.9	2	1.2	0.77
Bikar (D)					
Jaboerukku (1)	4	0.78	0.32	--	--
Arumenii (2)	1	0.34	--	--	--
Bikar (4)	2	0.094	0.069	0.082	--

Table B-4. (Continued)

Atoll and island	Number of samples	²⁴¹ Am (pCi/g dry weight of soil)			
		0 to 5 cm	0 to 15 cm	0 to 25 cm	0 to 40 cm
Jemo (S)					
Jemo (1)	1	0.011	--	--	--
Ailinginae (C)					
Ucchuwanen (15)	--	--	--	--	--
Knox (10)	1	0.63	<0.25	<0.18	<0.13
Mogiri (24)	4	0.39	0.23	0.15	0.098
Sifo (27)	6	0.18	0.18	0.13	--
Ribinouri (19)	3	0.43	0.33	0.22	0.14
Enibuk (23)	4	2.1	--	--	--
Manchinikson (25)	3	0.41	0.34	0.25	0.16
Kuobuen (18)	3	0.45	0.19	0.13	0.08
Majokoryaan (8)	2	0.94	0.48	0.50	0.34

a Code letter for atoll.
 b Code number for atoll.

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COLLECTION Marshall Islands
BOX No. 5688
FOLDER Marshall Islands
Oct - Dec 1982

DOCUMENT DOES NOT CONTAIN ECI

Reviewed by DJ Pineda Date 4/30/97