

SECRET

ASSOCIATED UNIVERSITIES, INC.

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Safety & Environmental Protection Division

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April 1, 1980

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Division of Health and  
Environmental Research  
U. S. Department of Energy (DOE)  
Washington, D. C. 20545

REPOSITORY P. N. N. L.  
COLLECTION Marshall Islands  
BOX No. 5687  
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Dear Tom:

In response to your question concerning the annual bone marrow dose equivalents, we have constructed Table 4 which lists those individuals whose red bone marrow dose equivalent exceeded 500 mRem in one year. In this table as with the annual total body dose equivalent table, one year is defined as the 12 consecutive months beginning September 1 and concluding August 31.

During the year 1977 (9/1/76 to 8/31/77), 4 individuals exceeded the annual total body dose equivalent and 28 individuals exceeded the annual red bone marrow dose equivalent of 500 mRem in one year. In the year 1978 (9/1/77 to 8/31/78), 22 individuals exceeded the annual total body dose equivalent and 49 individuals exceeded the annual red bone marrow dose equivalent of 500 mRem in one year.

The higher number of persons who exceeded the annual dose equivalent to the red bone marrow is the result of the red bone marrow receiving a higher photon-dose relative to most other tissues in the body. When absorbed into the blood, cesium is widely distributed among the body tissues, muscle having the highest concentration. Since muscle is widely distributed in the body, cesium is considered to irradiate the entire body. There is some buildup of the dose from photons in organs near the center of the trunk with smaller values of dose for organs near the surface. This variation is as much as a factor of two. Thus, there are individuals with annual total body dose equivalents less than 500 mRem in one year but with annual red bone marrow dose equivalents in excess of 500 mRem in one year.

If we can be of further service, please do not hesitate to contact Bob Miltenberger or Ed Lessard at FTS 666-2503, or me at 666-4250.

DOCUMENT DOES NOT CONTAIN ECI

Reviewed by DJ Kraker Date \_\_\_\_\_

Sincerely,  
N.A.  
N. A. Greenhouse

NAG/slg  
cc: W. Robison  
3. Wachholz

Table 4

Individuals Receiving a Dose Equivalent to the Red Bone Marrow  
of 500 mRem or More During a Residence Interval of One Year\*

ID#	1977		1978		WATO	Age Years	Residence Interval Years
	Reported Red Bone Marrow Dose mRem	Excess Red Bone Marrow Dose mRem	Reported Red Bone Marrow Dose mRem	Excess Red Bone Marrow Dose mRem			
6076	478	-	705	205	Unknown	39	3.3
6096	447	-	511	11	Batinkotmein	48	3.3
6008	518	18	579	79	Unknown	32	4.3
863	351	-	505	5	Lokirenkan Ion	27	4.3
6086	508	8	662	162	Janai	46	8.3
6070	448	-	652	152	Unknown	28	10.3
6117	367	-	498	0	Janai	22	6.3
6128	437	-	555	55	Lokirenkan Ion	31	7.3
6125	477	-	614	114	Batiten	35	7.3
6067	418	-	587	87	Monatat	56	7.3
6018	510	10	844	344	Unknown	34	6.3
6126	643	143	857	357	Unknown	35	2.3
6017	540	40	897	397	Mwen Elap	49	8.3
6068	360	-	543	43	Manibot	56	6.3
6033	466	-	676	176	Unknown	27	8.3
6119	383	-	561	61	Batiten	17	7.3
864	527	27	592	92	Batiten	51	7.3
966	679	179	999	499	Elak	56	7.3
6032	526	26	698	198	Batinkotmein	32	3.3
6115	439	-	598	98	Janai	43	7.3
6035	322	-	497	0	Unknown	20	6.3
6061	361	-	512	12	Unknown	32	6.3
934	616	116	917	417	Elak	43	6.3
6034	426	-	671	171	Mwen Elap	46	7.3
6009	781	281	1035	535	Mwen Elap	6	4.3
6049	760	260	1171	671	Unknown	8	2.3
6042	-	-	514	14	Unknown	7	0.55
6014	605	105	1174	674	Mairik	5	1.6
6012	651	151	854	354	Monkono	7	7.3
6016	651	151	904	404	Elak	10	7.3
6013	689	189	914	414	Unknown	5	2.3
6133	784	284	1221	721	Batiten	11	7.3
6132	603	103	959	459	Unknown	12	2.3
6094	585	85	898	398	Unknown	10	6.3
6092	701	201	1124	624	Unknown	8	6.3
6038	599	99	825	325	Unknown	6	2.3
6103	624	124	893	393	Manibot	9	3.3
6028	611	111	839	339	Batiten	7	5.3
6044	745	245	996	496	Elak	6	5.3
6081	-	-	597	97	Unknown	9	0.97
6048	-	-	642	142	Monkono	13	0.55
6023	508	8	627	127	Manibot	8	4.3
6131	493	-	639	139	Lokirenkan Ion	14	6.3
6015	362	-	599	99	Monatat	11	1.7
6030	559	59	854	354	Batinkotmein	10	3.3
6027	437	-	549	49	Unknown	6	3.3
6010	520	20	672	172	Janai	8	7.3

Cont'd Pg 2.

6105	541	41	654	154	Janai	5	3.3
6025	499	0	600	100	Lokirenkan Ion	5	3.3

\* One year is defined as the period beginning September 1 and concluding August 31.