

NW: 972006A
By: DL Date: 7/27/05

REPOSITORY NARA - College Park
RG 326 AEC SECRETARY FILE
COLLECTION 1951-1958
BOX No. 47 - 2
FOLDER MSH 3 Radiation V3 March 1, 1957

A
B
R

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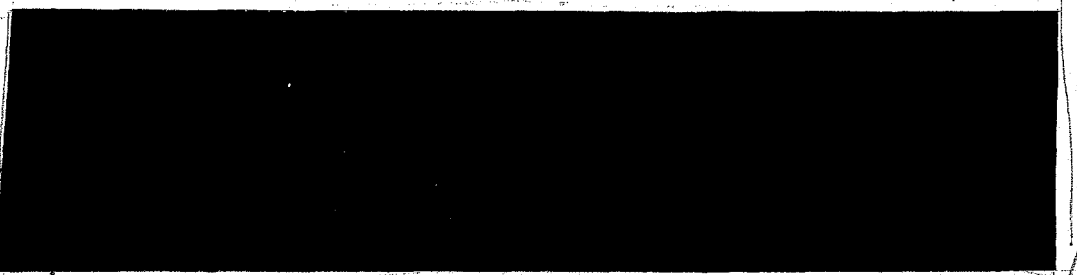
MEMORANDUM FOR MR. MURRAY:

SUBJECT: EXPECTED RADIOSTRONTIUM BODY BURDEN FROM 3500 MEGATONS OF FISSION ENERGY RELEASE IN THE NORTHERN HEMISPHERE

I have a little difficulty checking your figure of 2 to 10 times tolerance for 3500 MT of fission, so I am sending you my calculations.

The consequences of such a catastrophic war in so far as radiostrontium is concerned would depend on the conditions of firing so we take three different sets of assumptions to cover the range of probabilities.

Case A - Firing Under Same Conditions as Fast Tests



Dis
6.1(a)

Case B - All Ground Wired as Bravo in Castle

In this Case the bombs all produce the Bravo cigar patterns and these contain about 80 percent of the total, the rest being disseminated world-wide. At the rate of 7000 square miles and 10 MT fission per bomb we get 1/17 kiloton fission per square mile or for normal soil with 20 grams of exchangeable calcium in the top 2.5 inches, a human body burden about 100 times the tolerance level for large populations for people living entirely on food grown in the fallout area of some 2.4 million square miles, but in the rest of the area the level would be only 10 to 15 percent of tolerance. Thus avoidance of the contaminated soil for farming would reduce the level below tolerance.

MI-0208

| DEPARTMENT OF ENERGY DECLASSIFICATION REVIEW | |
|--|------------------------------------|
| GLF REVIEW AUTHORIZED BY: <u>[Signature]</u> | DETERMINATION (CIRCLE NUMBER(S)) |
| DATE: <u>7/27/05</u> | 1. CLASSIFICATION RETAINED |
| OFFICE: <u>[Signature]</u> | 2. CLASSIFICATION CHANGED TO: |
| TELEPHONE: <u>[Signature]</u> | 3. CONTAINS NO DCE CLASSIFIED INFO |
| | 4. COORDINATE WITH: |
| | 5. CLASSIFICATION CANCELLED |
| | 6. CLASSIFIED INFO BRACKETED |
| | 7. OTHER (SPECIFY): |

[Redacted]
[Signature]

OISA20C000137

NWDDA 972006A-747

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DATE: 7/27/05
For The U.S. Atomic Energy Commission
[Signature]
Director of Classification

Case C - Air Fired



DOE
6.1 (a)

Thus, I get numbers somewhat lower than the 2 to 10 times tolerance figure you gave the JCAE on January 31. Of course, conditions of firing obviously are of extreme importance and I may not have chosen the most likely ones, but it seems to me that your figures probably are about ten times too high.

W. F. Libby

CC: Mr. Strauss
Mr. Vance
General Fields
Dr. Durham
File
Reading File

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