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NORTH ATLANTIC MILITARY COMMITTEE

1791

COMITE MILITAIRE DE L'ATLANTIQUE NORD

Standing Group

Groupe Permanent

SGM-382-57

6 June 1957

MEMORANDUM FOR THE GERMAN MILITARY REPRESENTATIVE

SUBJECT: Effects of Radioactivity upon Electronics

Reference: German MR ltr Nr 138/57 of 8 May 57

1. The ionization in the vicinity of the point of burst of a nuclear weapon will attenuate radar waves in the frequency range 3 to 25 centimeters for a few milliseconds following nuclear zero. The attenuation afforded by radioactive clouds generated by nominal yield weapons for signals in this frequency range will be small; however, for multi-megaton weapons some attenuation may subsist for moderately long periods of time.

372.2

2. It is entirely reasonable to suppose that intense radioactivity will affect the operation of electronic equipment. Generally speaking, the damage to electronic equipment components by neutron flux is independent of delivery rates, i.e., if the threshold of damage to a transistor is  $10^{13}$  neutrons/square centimeter as determined from an integrated dose study in a nuclear reactor, the same damage would be done by this flux if delivered by a nuclear weapon. Certain classes of transistors are damaged more than others by neutron flux. Semi-conductors are more vulnerable to radiation than other electronic circuit components, followed by capacitors.

3. It is expected that radio transmitting and receiving stations, as ordinarily constructed, will be severely damaged by

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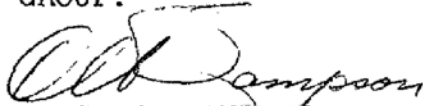
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thermal radiation and blast at much greater ranges from the bomb burst point than neutron and  $\gamma$  (gamma) ray damage to electronic equipment.

FOR THE STANDING GROUP:



C. H. SAMPSON  
Commander, U.S. Navy  
Deputy Secretary

CHS/md