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ARM1.941128.009

MEDDH-RS (9 Dec 63) 1st Ind
SUBJECT: Length and Range of Flash Blindness (U)

Headquarters, Department of the Army, Office of The Surgeon General,
Washington, D.C. 20315 JAN 10 1964

TO: Commanding General, U. S. Army Materiel Command, ATTN: ANCRD-DC,
Washington, D.C. 20315

1. While the variables involved in the production of retinal burns have been well described, precise definition of flash blindness factors remains a problem.

2. Both duration (length) and slant range (range) of flash blindness as a nuclear weapons effect must be defined in terms of the visual task to be performed by personnel subjected to the photostress. The ultimate situation is one in which visual impairment of a few seconds duration results in such severe performance decrement that mission accomplishment becomes impossible. For example, in low level flight, a jet aircraft may crash if the pilot is flash blinded even momentarily.

3. There is good reason to include in the flash blindness problem the retinal area that is involved in the formation of the retinal image of a fireball. Even a small retinal image, if placed on the fovea, may impair a critical element of visual function. When this retinal area is included in the flash blindness problem the effective slant range must be extended to the horizon for personnel on the ground and beyond the ground horizon for airborne personnel. This is particularly true when low atmospheric attenuation is assumed.

4. Considerations of duration are best approached within the bounds of sharply defined limits. Defining limits must include the degree of visual impairment to be considered and/or its related performance decrement as well as the duration of that impairment. For example, if better than 20/40 vision is normally required for performance of a task and less than 20/40 vision can be tolerated for only ten seconds, the problem becomes one of definition of the sorts of photostress that will produce flash blindness incompatible with the performance of tasks requiring at least 20/40 vision for at least ten seconds. If the duration of impairment is for ten seconds, exposure characteristics must be determined for each level of performance decrement that occurs.

5. Within this total problem, there are other more detailed considerations such as the effect of pupillary size and individual variability of response.

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WNRC: 21 Nov 94
RG: 112
Accession # 67A-4813
Box # 36
File Name: Flash Blindness
Correspondence

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MEMO-88 (9 Dec 63)

SUBJECT: Length and Range of Flash Blindness (U)

6. Several references of value are listed:

a. Savaria, S. L., Alder, S. V., Haxton, H. L., and Culver, J.F., Photostress and Flash Blindness in Aerospace Operation. Aerospace Medicine 34: 1093-1098, Dec., 1963 (also in American Journal of Ophthalmology 56 (4): 369-393, Oct., 1963).

b. Whiteside, T. C. D. The Observation and Incidence of a Nuclear Explosion. Flying Personnel Research Committee Report No. 1075.1, 1960.

c. Matcalf, R.D. and Horn, H.H. Visual Recovery Times from High Intensity Flasher of Light. WADC-TR-58-232, Oct., 1958.

FOR THE SURGEON GENERAL:

SECRET
R.E.S.

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HEADQUARTERS
UNITED STATES ARMY MATERIEL COMMAND
WASHINGTON 25, D.C.

AMCRD-DC

9 December 1963

SUBJECT: Length and Range of Flash Blindness

TO: The Surgeon General
Department of the Army
Washington, D.C. 20315

1. Reference multiple address letter, AMCRD-DC, 22 November 1963, Subject: Report by the U.S. Representative to Fourth Meeting of the Technical Sub-Group of the Ad Hoc Working Group on Protection Against NBC Warfare (AC/196), held at NATO Headquarters, Paris, France, 7, 8 and 11 October 1963 (U) with one Inclosure.

2. Par. 9 and 11d of Inclosure #1 to above reference stated that the U.S. Representative to Technical Sub-Group of AC/196 agreed to furnish information on the length and range of flash blindness.

3. Since this matter falls within the purview of your office, it is requested that the information on this subject be forwarded to this Headquarters, ATTN: AMCRD-DC for transmittal through appropriate channels to Technical Sub-Group of AC/196.

FOR THE COMMANDER:

FREDERICK J HURLEY
Colonel, CmlC
Chief, Cml-Bio Branch
Development Division

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ltr dtd 22 Nov 63 (C)

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