GREENHOUSE
REF: 33

HEADQUARTERS
TASK GROUP 3.2
APO 187

30 January 1951

Annex "G" to Task Group Operation Plan No. 1-50

RADIOLOGICAL SAFETY

403453

1. Responsibility for Radiological Safety is a command function. The Commanding General, Task Group 3.2, is responsible for Radiological Safety on Eniwetok Island less those activities involving Task Group 3.1 and 3.4.

2. The Commanding General, Task Group 3.2, will appoint a qualified Radiological Safety Officer.

3. The responsibilities of the Radiological Safety Officer are:

a. Advising the Commanding General on:

(1) Presence and location of radiological hazards on Eniwetok Island. Such hazards will be conspicuously marked and placed "Off Limits" to all personnel not authorized to enter the area. The Radiological Safety Officer is charged with delineating such areas.

(2) Safe employment of personnel in radioactive areas.

(3) Precautions necessary for protection of personnel against radiological hazards.

b. Constant rechecking of known radioactive areas and submitting reports on their change of radioactivity to the Commanding General.

c. Advising the Task Group Surgeon of necessary data pertaining to the effects on ionizing radiation on personnel.

d. Receiving medical reports from the Task Group Surgeon on those personnel whose duties require them to work in a radioactive area.

(1) Supervising all Task Group 3.2 personnel entering a radioactive area and preventing those not physically qualified from entering such areas by notifying Unit Commanders of personnel disqualified by the Surgeon by Radsafe physical examinations.

e. Receiving and properly utilizing information and radiological safety equipment from the Special Assistant for Radiological Safety, Joint Task Force THREE.

f. Constant monitoring of radioactive areas in which personnel of Task Group 3.2 are working and rendering daily reports to the Surgeon, Task Group 3.2, on the total daily amount of radiation received by each such individual.

(1) Forwarding of individual dosimeters and film badges to the Radsafe Officer, Task Group 3.1.

4. The Commanding General, Task Group 3.2, will notify the Task Group Surgeon of the names of all personnel who are likely to be exposed to a radiological hazard.

5. Physical Qualifications:

a. The Surgeon of Task Group 3.2 will insure that all such individuals mentioned in par 3 are physically qualified for duty in a radioactive area. Such qualification will be dedetermined by a physical examination as prescribed in Joint

Task Force THREE Letter AG 702 dated 31 March 1950. In addition he will perform necessary repeated physical examination on all personnel who have received in excess of 0.1 Roentgen of radiation in 24 hours. He will immediately notify the Radiological Safety Officer of those personnel who have been physically disqualified from reentry into a radioactive area.

b. Upon termination of duty with Joint Task Force THREE, all personnel of Task Group 3.2 who have been exposed to a radiological hazard will undergo a phyiscal examination as prescribed by Joint Task Force THREE.

6. The Radsafe Officer will submit to Commander, Task Group 3.1, two weeks prior their entry into a radiologically hazardous area, the names of all individuals assigned to Task Group 3.2 who are physically qualified to enter such areas.

BY COMMAND OF BRIGADIER GENERAL WALK:

OFFICIAL:

E. W. HIDDLESTON
Lt Col GSC
Actg Chief of Staff

E. W. HIDDLESTON
Lt Col GSC
AC of S, G3

APPENDIX I TO ANNEX "G"
TO
OPERATION PLAN 1-50
HAZARDS RESULTING FROM ATOMIC BOMB EXPLOSIONS

HEADQUARTERS
TASK GROUP 3.2
APO 187
30 January 1951

1. NATURE OF HAZARDS

a. When an atomic bomb explosion occurs, a tremendous quantity of energy in a variety of forms is released. This energy is propagated outward in all directions.

b. When fission occurs, the immediate reaction is intense emission of ultra-violet visible and infrared (heat) radiation, gamma rays and neutrons. This is accompanied by the formation of a large ball of fire. The largest part of the energy from the explosion is emitted as a shock wave. The ball of fire produces a mushroom-shaped mass of hot gasses, the top of which rises to about 10,000 feet in the first minute and about 30,000 feet in five minutes. In the trail below the mushroom cap, a thin column is left. The cloud and column are then carried down-wind, the direction and speed being determined by the direction and speed of the wind at the various levels of air from the surface to 50,000 feet (or higher) altitude.

c. All personnel of the Task Force will be well outside of the range of all hazards at the time of detonation, except from the intense light from the fire ball.

d. Following the detonation, personnel entering shot areas will be exposed to beta particles and gamma rays coming from induced neutron activity in the soil and any fission products which might have been deposited on the ground. There may also be a potential alpha particle hazard from the unfissioned fissionable materials which may be desposited on the ground.

e. The light of explosion is so intense that temporary blindness may occur through facing the ball of fire, unless the eyes are protected by dark glasses.

f. The emission of dangerous nuclear radiation can be separated into two time periods. The primary radiation which occurs at the time of the flash is composed of gamma rays and neutrons. Casualties may result

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from this primary radiation if the exposure occurs within 2,000 yards of zero.

2. PROTECTION.

a. Against the primary radiological effects, distance will provide protection.

b. Against the secondary radioactivity hazards from radioactive fission products, induced radioactivity and unfissioned residue, detection and avoidance provide the best protection. Suitable instruments indicate directly both the presence and intensity of radioactivity at a given place. Area reconnaissance, the maintenance of contamination situation maps, the posting of areas of hazard and minimizing the spread of contaminated material into uncontaminated areas constitute the active measures for reducing the radiological hazard.

c. Personnel within fifteen (15) nautical miles and who are to be facing in the direction of the flash will be required to wear special goggles to protect their eyes against excessive light. Personnel within fifteen (15) nautical miles who are not provided goggles will face in the opposite direction from the flash.

3. ANTICIPATED HAZARD AREAS.

a. Immediately under the bomb burst there will be an area of intense radioactivity roughly 500 yards in radius.

b. Extending downwind, an airborne radioactive hazard will exist. Its characteristics will depend on the meteoroligical influences such as wind, speed and direction at various altitudes up to the maximum height reached by the cloud.

c. Contaminated water in the lagoon adjacent to the shot island should be of no consequence, but will be checked by the Radiological Safety Unit of TG 3.1.

d. All individuals or objects leaving contaminated areas may transfer radioactivity to clean areas.

e. By means of instruments, such as Geiger-Mueller counters and ion chambers, it is possible to detect the area of contamination and to measure the intensity of the radioactivity. Radiation intensity will be measured and reported in roentgens per hour. Besides these instruments, dosimeters and film badges will be used as indicators of the accumulated

exposure to radioactivity. Personnel will wear film badges to provide a permanent record of exposure.

f. The intensity of the radioactive hazard tends to decrease with time due to:

(1) decay of radioactive materials, and

(2) dispersion and dilution depending upon climatic conditions. As an approximation, the intensity of the radiation from the fission products decreases by radioactive decay inversely with the time after the detonation. An area which has 15 roentgens per hour at one (1) hour after detonation would have an intensity of 7.5 roentgens at two (2) hours after detonation and five (5) roentgens at three (3) hours.

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