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HEADQUARTERS

TASK GROUP 7.1

JOINT TASK FORCE SEVEN

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SAN FRANCISCO, CALIFORNIA

This message is classified by law.  
2 April 1954

*File Bravo*  
*TRAD SAFE*

TO: Commander, Task Group 7.5  
Joint Task Force SEVEN  
Pacific Proving Ground

410638

FROM: Commander, Task Unit-7, TG 7.1

SUBJECT: APPROXIMATE EXPOSURES OF PERSONNEL ABOARD SHIP AT BIKINI ATOLL  
FOLLOWING BRAVO

REFERENCE: Letter CTG 7.5 To CTU-7, TG 7.1, Subject as above, dated 31 Mar 1954

1. Control of radiation exposures by the radiological safety unit follows established practices of previous test organizations and is similar to the procedures followed by health physics organizations of AEC installations. The control procedure calls for radiological safety clearance before entry into contaminated areas. This clearance consists of discussion of entry: as to radiation intensity at point of interest, time of stay, number of personnel entering area, previous exposure of personnel and issue of protective clothing and dosimetric equipment, i.e. film badges and dosimeters. Lists of accumulated personnel dosages in excess of 2.5 R are maintained every day in the Rad-Safe control offices aboard the USS Estes, Bairoko, Curtiss, and USS Ainsworth. Personnel appearing on lists are advised of current exposures and requested to limit activities so as not to exceed the Maximum Permissible Exposure of JTF-7. Current dosage for personnel with less than 2.5 roentgens can be obtained from TU-7 dosimetry unit for mission planning purposes in cases where relatively large exposures are anticipated.

2. Emergency measures call for the measurement of radiation intensities and record of exposure time followed by assessment of dosage. This dosage is determined by the computation:

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$$\text{Dosage} = \text{Intensity} \times \text{Time}$$
$$\text{Roentgens} = \text{Roentgens/Hr} \times \text{Hours}$$

Another accepted method, is to determine the average exposure of film badges exposed to a common intensity and then assess all personnel this average exposure. This practice is the standard procedure of dose measurement aboard naval vessels of the Task Force.

3. An unforeseen "fall out" of radioactive materials covered several ships of Task Force SEVEN on 1 March 1954. Holmes and Karver employees were housed aboard ship during this fall out and were below decks when fall out occurred and when immediate counter-measures were adopted. The maximum reading of contamination was obtained on the flight deck of the USS Bairoko and reached a peak level of one roentgen per hour at one hour after detonation. Holmes and Karver personnel were then exposed to contamination for a period of twenty-eight hours. Calculation indicates that a maximum dosage of 2.5 Roentgens would have been received by an individual remaining on the flight deck during this period. Personnel on the hanger deck, where a maximum intensity of 300 mr/hr was obtained would have received a dose of 0.85 roentgens. Because contaminated helicopters

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SUBJECT: APPROXIMATE EXPOSURES OF PERSONNEL ABOARD SHIP AT BIKINI ATOLL  
FOLLOWING BRAVO (CONT'D) 2 April 1954

were stored on the hangar deck, badges issued to TG 7.1 and 7.5 personnel were collected and developed to establish an average exposure for all TG 7.1 and 7.5 personnel. Dosages in general varied between 1.0 and 1.5 roentgens with a statistical average of 1.2 roentgens. All Task Group 7.5 personnel aboard the Fairbroke without film badges were then assessed 1.2 roentgens. Task Group 7.5 personnel aboard the USS Ainsworth were similarly assessed .15 roentgens. Those aboard the USS Estes and USS Bellegrave were assessed 0.5 roentgens. Those aboard the USS Curtiss were assessed 0.25 R. These assessed values were entered on the exposure records of TU-7.

4. Due to faulty communication and resupply procedures an emergency existed on 8 March 1954 for a few hours when seventy three Holmes and Harver personnel were permitted to enter Tare without film badges. The radiation intensity at this time approximated 0.06 R/hr. Badges of other personnel working in the area indicated an average eight hour exposure of 0.4 roentgen. A list of personnel without badges was maintained and they were assessed 0.4 roentgen. This assessment was entered in the official exposure record. This emergency was caused by need to salvage equipment from Tare. Pressure to conduct this operation forced the radiological safety organization to this emergency measure.

5. Development and recording of Joint Task Force SEVEN personnel film badges takes place at two locations; one aboard the USS Fairbroke at Bikini Atoll and the other at Elmer at Eniwetok Atoll. Duplicate files at both atolls are kept current by issuing all film badges on duplicate issue sheets and exchanging one copy when the doses received have been recorded thereon.

6. Since the exchange of completed issue sheets is often delayed a few days until all badges entered on that sheet have been returned, a Holmes and Harver clerk extracts all film badges doses as developed at Bikini Atoll and forwards this information to Eniwetok Atoll daily. These doses are later supported by the duplicated issue sheets as they are received.

7. Since the incident of March 8th all authorized exposures have been interpreted with film badges and recorded on TU-7 exposure cards. Exposure lists are and have been current with personnel badges turned in. An adequate record of TG 7.5 radiation exposures is being maintained and CTG 7.5 will receive the usual complete list of exposures at the completion of Castle.

8. The maximum permissible exposure of 3.9 roentgens is an authorized figure of the AEC Division of Biology and Medicine for Operation Castle.

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JOHN D. SERVIS  
Commander, TU-7

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