ENCLOSURE (1)

PROCEDURES FOR SHIPBOARD NBC DEFENSE TRAINING

Nuclear, Biological and Chemical Defense procedures are normally carried out in three phases:

A - Preparation - setting up protective measures

B - Detection - monitoring

C - Decontamination - clean up

The following procedures are intended to provide full and realistic training.

A. PREPARATION

1. Sound general alarm.

   a. Make announcement on P.A. system, where installed.

   b. Secure ventilation motors.

   c. Make closures. (When attack is imminent, or when proceeding in an area where risk of attack is high this step may be taken in advance).

   d. Rig washdown countermeasure. (When attack is imminent, or when proceeding in an area where risk of attack is high this step may be taken in advance).

   e. Activate washdown system, as directed by D. C. Central.

   f. Make frequent readings of radiac in wheelhouse.

   g. Maneuver ship to evade fallout.

   h. Man D. C. Central and establish communications with all stations.

2. Man NBC Center.

   a. Set up plotting sheets.

   b. Establish communications with D. C. Central.

3. Set up and equip personnel decontamination station(s).

4. Deliver radiacs as ordered by NBC Officer, to:

a. Bridge (normally maintained in this location).

b. Engine Room.

c. NBC Center or NBC locker.

d. Personnel decontamination station.

5. Engine Room - secure fresh-water, sanitary system and evaporators.

6. Don protective clothing and masks.

a. All personnel who will be exposed to weather decks will don protective clothing and masks (monitors and decontamination personnel).

b. If necessary engine room personnel will don masks to guard against inhalation of radioactive material.

7. Issue personnel dosimeters.

a. DT-60/PD dosimeters will be issued to personnel likely to be exposed. (During actual attack, personnel dosimeters must be issued to all persons on board). Self-reading pocket dosimeters will be issued to monitoring and decontamination teams (one per team).

8. Provide radiation shielding.

a. Direct all non-essential personnel to shielded locations within the ship.

b. Pass the word "no eating, drinking or smoking until further notice."

c. When high level radiation intensities dictate, evacuate all topside personnel, including bridge personnel, to a <u>well</u> shielded area.

B. DETECTION

1. Initial internal survey. (The internal survey procedures prescribed for combat vessels require numerous personnel and considerable equipment and are therefore modified as follows for MSTS civilian-manned ships).

a. A constant or periodic check on the bridge radiac will indicate when fallout starts and also indicate the build-up of radiation intensity. When the intensity ceases to rise, and remains constant or decreases over a period of time, usually about one half hour, the washdown system can then be secured.

b. If the bridge has been evacuated due to high radiation intensity, send a monitor to the wheelhouse periodically to obtain radiac readings to determine when fallout ceases.

2. Initial external survey. The purpose of the initial external survey is to determine average radiation intensity of topside areas and provide data on which to base calculations of stay time and dose rates as a guide to further necessary actions.

a. The initial external survey will be accomplished by one man after washdown is stopped. He will proceed at a brisk walk around the top decks over the habitable areas of the ship and record average levels of radiation intensity.

3. Detailed survey. The purpose of the detailed survey is to pinpoint and mark high intensity areas for decontamination.

a. A monitor team, consisting of a monitor and a recorder will make a detailed survey, exiting from the wheelhouse and starting with the midship house from topside down and from amidship towards the bow and stern. The information obtained will be passed to NBC Center and plotted on deck plans for the purpose of planning decontamination steps.

4. Supplemental surveys

a. Continuous surveys of ventilation ducts, boiler casings and sea suctions in the engineering spaces will be made.

b. At a convenient time after the external surveys, supplemental surveys will be conducted in the following locations:

(1) Galleys and messing areas.

(2) Berthing areas and scupper piping passing through them.

(3) Any areas within the ship where contamination is suspected of entering the ship through cracks around doors or ports, through ventilation systems, tracking by contaminated persons or entrance of contaminated water.

5. Remonitoring

a. Remonitoring will be accomplished after decontamination to determine the extent to which contamination is reduced.

6. Personnel monitoring

a. Personnel monitoring will be accomplished by trained monitors at the personnel decontamination station, and will be done by passing the probe of the low range radiac over the persons body after they have showered.

C. DECONTAMINATION

1. Decontamination will be accomplished after fallout has ceased. The priority for decontamination of specific areas depends on how quickly the contaminated objects or areas are needed. The two types of decontamination are:

a. Rough decontamination.

b. Detailed decontamination.

2. Rough decontamination will reduce the radiation intensities of essential objects and areas to levels less hazardous to personnel. Rough decontamination will be accomplished in the following manner:

a. Decontamination teams will be attired in foul-weather gear or protective clothing with gloves and boots or overshoes, protective masks will be worn to prevent the inhalation of radioactive particles.

b. Personal dosimeters (DT-60/PD) will be worn by each man in addition to the control self-reading pocket dosimeter furnished to each team.

c. Teams will be provided with pails, stiff brushes and salt water detergent.

d. Decontamination will be accomplished starting from topside levels, on the windward side, working downward from amidships toward the bow and stern. Particular and initial attention will be given to living and working areas. However, all locations vital to the normal operation of the ship will be decontaminated as soon as practicable.

e. Scrub and wash down will be accomplished by brooming in one direction, toward a scupper, or overboard and will be so accomplished that areas already cleaned up are not re-contaminated.

f. Areas where the intensity is not reduced to an acceptable level after two scrubbings, will be roped off and marked with hazard markers. All stacks, stays, masts and rigging will be left for detailed decontamination by the shipyard.

3. Detailed decontamination entails the complete removal of all contaminate by sandblasting, chipping and scraping, and will seldom be accomplished by shipboard personnel, but will normally be done later by the shipyard.

D. SUMMARY. The following six basic steps will effectively reduce the radiation hazard to shipboard personnel:

1. BUTTON UP THE SHIP. This means that all openings into the ship will be closed except those which are absolutely necessary to operate the ship.

2. START WASHDOWN. Operation of the washdown system will wet external surfaces and prevent most of the contaminated particles from adhering to the topside areas.

3. MANEUVER THE SHIP. The ship will be maneuvered to avoid fallout, and to increase the effectiveness of the washdown.

4. PROVIDE SHIELDING. Designate shielding areas within the ship for all personnel, preferably on the lower decks and near the centerline.

5. MONITOR THE SHIP. Monitor the ship to determine areas of contamination, and the radiation intensities of those areas, for the purpose of planning further necessary actions.

6. DECONTAMINATE THE SHIP

a. Clean up the ship, starting with the areas that are most necessary to the operation of the ship.

b. Decontaminate all exposed personnel.

c. Re-monitor after decontamination.