THE CARE AND FEEDING OF HEDGEHOGS: SAFETY PRECAUTIONS FOR "HEDGEHOG" TYPE PROJECTORS AND AMMUNITION

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SAFETY PRECAUTIONS
For "Hedgehog" Type Projectors and Ammunition

The Care and Feeding of Hedgehogs
ORDNANCE PAMPHLET 2082

SAFETY PRECAUTIONS—FOR "HEDGEHOG" TYPE PROJECTORS AND AMMUNITION

1. Ordnance Pamphlet 2082 contains descriptive cartoons and specific comments pertaining to the observation of vital safety rules applicable to ASW projectors and ammunition. It emphasizes the key rules for personnel safety.

2. This publication is intended for use by all personnel concerned with the operation and maintenance of Projectors Marks 10, 11, 14, and 15, and other similar projectors, including projector ammunition. In order to insure safe handling of the ammunition and safe operation of the equipment, personnel should be thoroughly familiar with the contents of this publication and with the publications referenced herein.

3. This publication does not in any way supereede safety rules and regulations contained in publications concerning particular projectors or projector ammunition.

F. S. Withington

Paul D. Stroop
Rear Admiral, U. S. Navy
Acting Chief, Bureau of Ordnance
SAFETY PRECAUTIONS - FOR "HEDGEHOG"
TYPE PROJECTORS AND AMMUNITION

14 August 1969

PAGE 1 OF 1 PAGE(S)
(With enclosure)

After the attached enclosures (if any), which are replacement or additional new pages, have been inserted and after the following pen-and-ink changes (if any) have been made, insert this CHANGE between the front cover and title page and write on cover "CHANGE 2 inserted."

1. Page 1: Delete; and insert new page 1.

2. Page 7, last sentence: Delete; and insert the following: READ chapter 20 of OPNAV Manual 34P1, with changes, for detailed ordnance safety precautions. These are also available in NAVORDINST 5100.1.

3. Page 19, at the bottom of the page add:

This precaution cannot be overemphasized. Examine figures 14, 15, 16, 17, and 18 of OP 1001 (Second Revision) very carefully. The First Loader must ALWAYS cradle the upper portion of the round with one hand and grasp the after edge of the tail shroud between the fins with the other hand. The hand that grasps the tail shroud must NEVER be around the tail tube.

4. Page 20, after the first sentence of CHANGE 1 add:

In the case of Projector Mk 15 Mod 0, which is an automatically controlled mount, the area surrounding the mount should be cleared of all personnel when the mount is firing.
The hedgehog when approached right can be very friendly.

but...
After the attached enclosures have been inserted, insert this CHANGE between the front cover and title page and write on cover "CHANGE 3 INSERTED".


Requests for additional copies of this CHANGE shall be submitted to the Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, Pennsylvania 19120.
"SHORT" ROUND HANDLING PROCEDURES*

Presence of moisture or water in the cartridge case in the tail tube of the projector charge will cause the round to fall short of its intended range. If the round falls on deck observe the following precautions and procedures:

I. 7.2" Projector Charge with inert loaded head falls on deck:

A. The fired short round is totally inert if all the unburned powder has dropped out of the cartridge case. The round should be retained on shipboard. There is a very slight possibility that some unburned powder may remain in the cartridge case.

B. If the Cartridge Case Base 328379, Piece 2, can be found, examination will confirm that the primer tube is split open, indicating that the primer has fired, the only direct information that this piece can furnish with regard to the malfunction. Any unusual condition of the case base, such as, very uneven flaring or very marked splitting of the case base lip, or actual splitting of the case base, should, however, be noted.

C. All unignited powder grains which can be found should be gathered up and placed in a powder sample bottle.

D. The components in paragraphs IA, B, and C above should be turned in to the nearest Naval Ammunition Depot tagged "Malfunction – Report to NAD Crane (Code QE) with a copy to NAVORD (ORD-935).”

WARNING

HE loaded Round Jettisoning Safety Precautions:
The setback on launching with a short round would probably be sufficient to cause the setback collar to move back and shear the collar shear wire of the Fuze Mark 158 Mod 0. However, contact with the arming vane of the fuze should be avoided in any case during jettisoning.
II. 7.2" Projector Charge with explosive loaded head falls on deck:

A. JETTISON round in accordance with prescribed regulations. Observe following safety precautions:

1. DO NOT move or jar the fuze unnecessarily.
2. DO NOT move or jar the projector charge except from a distance.
3. DO NOT attempt to remove armed or partly armed fuzes. Dispose of the complete assembly by gently lowering over the side.
4. NEVER remove the vane or fuze plug from the fuze body as this will arm the fuze.

For the Fuze Mark 177 Mods 0 and 1, there is no setback collar but contact with the arming vane of the fuze should also be avoided during jettisoning.

III. Treatment of remaining rounds after occurrence of a short round:

A. Use of tail tube plugs (see NOTES) should tend to make short rounds isolated cases not representative of the lot. The short round would tend to be indicative of the combination of circumstances of a cracked cement joint in the cartridge case, a poorly assembled tail plug, and the probable drenching of the round in the ready service locker by green water during heavy seas. If there is evidence of such drenching, the rounds should not be used. Under any other circumstances, however, the remaining rounds may be retained and used.

*NOTES: Short rounds have been projected about 15 feet before landing on the main deck. Smokeless powder grains were found underneath the HEDGEHOG mount (projector) unignited.

The above malfunction is typical if water or moisture has entered the cartridge case in the tail tube of the projector charge. Although the two pieces of the cartridge case are cemented together prior to the loading of the cartridge into the tail tube, there is some possibility that the cemented joint deforms or cracks during the press loading procedure required to assemble the loaded cartridge. The cemented joint becomes susceptible to the entrance of moisture or water if such cracking should occur. Most likely conditions for entrance of
water would be with rounds in ready service lockers and with the ship encountering heavy seas. Rubber tail tube plugs, intended to prevent the entrance of moisture into the tail tube, are available. Rounds have this tail tube plug assembled prior to issue for this purpose.

To emphasize the effect of water in the cartridge case of the 7.2" Projector Charge, it should be noted that tests made at the Naval Weapons Laboratory, Dahlgren, in October 1944 indicated that about 45 drops of water (about 3-1/2 cc or 1/8 fluid ounce) are sufficient to reduce the range of the short range projector charge to about 8 ft., the range obtained by firing the primer only. Water in the cartridge case does not appear to affect the firing of the primer. Reduction in range is roughly proportional to amount of water in the case so that even a few drops will reduce range appreciably. The necessity for the use of tail tube plugs for rounds in ready service locker stowage should therefore be apparent.

"MISFIRE" HANDLING PROCEDURES

I. Check for misfires immediately after firing salvo or firing from individual spigots. In the event a round, inert or HE loaded, fails to leave the spigot, observe the following safety precautions:

A. Make several attempts to fire.
B. Allow 10 minutes interval before removal of round from spigot of projector. Do not approach projector during this interval. NO ONE should enter the danger area FOR 10 FULL MINUTES after the last attempt to fire! This precaution applies whether or not the off mount safety plug and the panel safety plug have been removed from their receptacles.
C. Remove round from spigot. Misfires removed from projector spigots after 10 minute waiting period are safe to handle and stow. They will furnish the best source of information for correction of malfunctions. Stowage on deck, covered, is suggested.
D. Retain defective round aboard ship for possible investigation by the Naval Ordnance Systems Command.
E. Turn in defective round to the nearest Naval Ammunition Depot tagged "Malfunction - Report to NAD Crane with a copy to NAVORD (ORD-935)."
COMMANDING OFFICER’S PREROGATIVE ON
HANDLING OF SHORT ROUNDS AND MISFIRES

Nothing in the above indicated treatment of short rounds or
misfires is intended to conflict with the Commanding Officer’s
prerogative and specific responsibility to jettison these rounds
whenever local conditions indicate such action is desirable or
necessary to insure the safety of the ship or the ship person-
nel, or, in a tactical situation, to maintain maximum rate of
fire.
The hedgehog when approached right can be very friendly.

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but...
Technique is important!!

Learn and practice all safety precautions! They will prevent accidents to you and your shipmates.
So here are a few things to remember!!!

What is a hedgehog?

The Hedgehog, Projectors Mk 10, 11, 14, and 15, is a weapon designed and constructed to fire twenty-four point detonating fuze depth charges within 2.4 seconds. The Hedgehog is electrically fired. The fuze arms after impact with the water and the round is detonated upon physical contact with an underwater target. The bottom of the sea, if soft, usually will not cause the Hedgehog charge fuze to fire. The fuze utilized in the Hedgehog charge normally requires 15–25 feet of underwater travel before the fuze arms.

This publication is intended to impress Navy personnel with the importance of knowing the necessary safety precautions that should be observed when using the Hedgehog projectors and Hedgehog ammunition.
Your first contact is in the magazine

**KEEP** magazines scrupulously clean and dry **AT ALL TIMES**!

Explosives, explosive containers, and authorized magazine equipment shall be **STOWED IN MAGAZINES ONLY**!

Personnel equipment, tools, or items unrelated to magazine equipment **MUST NOT** be stowed in magazines!

**DO NOT** use naked lights, matches, or other flame producing apparatus in, or near, a magazine!

**DO NOT** smoke in, or near, a magazine!

**USE ONLY** explosion-proof flashlights, or other **AUTHORIZED** equipment in, or near, a magazine in case of light failures!

**DO NOT LOITER** in magazines!

**MAKE CERTAIN** that all explosives, explosive containers, and magazine equipment are **NEATLY AND SECURELY** stowed.

**READ** “Ordnance Navy Safety Precautions,” Navord Instruction 5100.1 for detailed safety instructions.
Fuzing is not amusing

ALWAYS carry the Hedgehog charge CAREFULLY!

NEVER DROP or rough handle the Hedgehog projectile!

AVOID BUMPING the Hedgehog charge with other objects.

BLOCK ALL projectiles to prevent rolling!

STORE FUZES IN FUZE MAGAZINE ONLY! All stored fuzes must be neatly and securely stored to prevent shifting.

NEVER OPEN fuze containers within the fuze magazine.

REMOVE FUZE CONTAINERS UNOPENED from the fuze magazine and CAREFULLY deliver to the fuzing area!

DO NOT carry an overload to save a few steps. CARRY A SENSIBLE LOAD, CAREFULLY!

NEVER install fuzes into the charges in a magazine. Install fuzes ONLY in spaces provided for fuzing operation!
CAREFULLY OPEN fuze containers in fuzing area ONLY! Remove fuzes as needed.

MAKE CERTAIN that the fuze safety pin or clip is securely positioned through the fuze before installing the fuze into the projector charge.

USE THE SPECIAL SPANNER WRENCH ONLY to install or remove fuzes into the Hedgehog charge!!! DO NOT USE ANY OTHER TOOL. Make certain that this wrench is available!

DO NOT ATTEMPT TO TURN ARMING VANE on fuze!

AFTER FUZING projectile, recheck position of safety pin in fuze.

MAKE CERTAIN safety pin is spread!

SECURE fuze caps over fuzes immediately after fuzing and safety pin or clip inspection!

BE SURE you have read pertinent Bureau Publications before attempting any fuzing or defuzing operations concerning Hedgehog charges.
Ready stowage

GENTLY place fuzed and capped projectiles, FUZE END FIRST, in ready service locker!

SECURE charges within ready service locker with RETAINING BARS!

INSPECT all charges in ready stowage for dryness and for properly positioned tail tube plugs!

MAKE CERTAIN ready service locker doors are securely locked at all times, except when open for inspection and loading procedures!
**KEEP** all panel and junction box equipment **DRY AT ALL TIMES.** On power driven projectors, live 440-volt leads are exposed whenever controller, motor terminal boxes, and other equipment boxes are open. **SALT AIR** increases the **HAZARDS of ELECTRIC SHOCK** whenever these leads are exposed!
Working up the HEDGEHOG'S appetite

CRADLE and CARRIAGE locking devices MUST BE LOCKED before any personnel mount the projector prior to loading.

ALWAYS remove the off mount safety plug as well as the panel safety plug, and the firing key from their respective receptacle before authorized personnel approach a loaded or unloaded projector!
NEVER ASSUME THAT THE PROJECTOR IS NOT LOADED!!!
Feeding must be done with CARE

During all loading (or unloading) operations, the off mount safety plug as well as the panel safety plug, and any other firing key MUST BE OUT of their respective receptacles, REGARDLESS OF THE TYPE OF PROJECTOR AMMUNITION BEING HANDLED—LIVE, INSERT, DUMMY, ETC.

MAKE CERTAIN that all projector spigots are wiped free of grease before loading.

Do Not walk in front of projector during loading operations.

Do Not grasp the projector charge around the tail tube. GENTLY LOWER the projectile on the spigot, by supporting the projectile with the LOWER EDGE of the tail shroud.
IMMEDIATELY AFTER LOADING the projector, personnel must withdraw to a safe location. The safety plugs are inserted only AFTER ALL PERSONNEL WITHDRAW to a safe location.

NEVER TEST CIRCUITRY on a loaded projector!

PRIOR TO REMOVING fuze caps, safety pins, or clips for firing operations, MAKE SURE ALL SAFETY PLUGS HAVE BEEN REMOVED.

READ OP’s for detailed loading and firing information!
What did I do wrong?
Checking for misfires

CHECK FOR MISFIRES immediately after firing salvo. In the event of a misfire, NO ONE should enter the danger area FOR 10 FULL MINUTES after the last attempt to fire! This precaution applies whether or not the off mount safety plug and the panel safety plug have been removed from their receptacles. Dispose of misfires in accordance with prescribed methods!
**Reloading for another salvo**

Immediately after firing, remove the off mount safety plug, the panel safety plug and the firing key from their receptacles!

Make sure all safety plugs are removed prior to any unloading operation. Replace fuze safety pins or clips, and fuze caps before unloading charges.

Lock cradles and carriages!

**Do not walk in front of projector during loading or firing operations!!**
After firing

The cradle locking device **MUST BE LOCKED AT ALL TIMES** except when actually using or servicing the projector!

**DO NOT** use the projector area for a lounge room!

The defective wiring test **MUST BE PERFORMED**, whenever the projector wiring is serviced or replaced.

**ALWAYS** treat the projector as though it were a loaded gun!!!!
DISTRIBUTION

SNDL Part 1 (No. 67) and Part 2 (No. 24)
Two copies each unless otherwise excepted:
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