

10 September 1943

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From: The Chief of the Bureau of Ships.
To: The Commanding Officer or Prospective Commanding Officer:
USS GENERAL JOHN POPE (AP110) AP115
USS GENERAL ALEXANDER E. ANDERSON (AP111) AP116
USS GENERAL WILLIAM A. MANN (AP112) AP117
USS GENERAL HENRY W. BUTNER AP118
USS GENERAL WILLIAM MITCHELL AP119

SUBJECT: USS AP110-119 - Maximum Draft and Procedure for Maintaining Stability.

1. The ability of the subject vessels to survive underwater damage will be considerably improved by the measures outlined below. These measures should be observed at all times, now that danger is continuously present in port as well as at sea, even though they may cause considerable inconvenience and result in "stiff" rolling characteristics of the intact ship.

(a) Maintain the maximum practicable quantity of liquids in the large deep tanks and in the double bottom tanks as follows: *#H. Dept. 1*

(1) Refill each outboard fuel oil tank, frames 166 to 182, each double bottom fuel or diesel oil tank and the outboard wash water tanks (frames 148-166) with sea water ballast as soon as it becomes empty.

(2) Exercise care when loading liquids or ballasting that double bottom and wide deep tanks are filled to 95% of their capacity with fuel oil or to 100% of their capacity with water, as the case may be. The number of these tanks slack at any one time should be kept to a minimum in order to prevent reductions in metacentric height due to free surface.

2. The subdivision of the subject vessels is such that for all drafts less than a keel draft of 26'-0" aft and 25'-0" forward, sufficient reserve buoyancy is available for the flooding to be expected from one torpedo hit at any point along the length of the ship. This draft therefore is the criterion for maximum loading except under emergency circumstances when the exigencies of a particular mission justify the additional risk involved.

3. The principal subdivision of these ships consists of the shell and the transverse watertight bulkheads. Survival of flooding due to damage depends upon the ability of the bulkheads to confine the flooding.

(a) Careful inspections should be made from time to time with a view to detecting and correcting any leaks in these bulkheads.

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(b) Watertight doors should be closed and dogged when damage occurs. Experience teaches that open doors are subject to damage which prevents closing; also that arrangements to close doors after damage cannot be relied upon due to confusion and to personnel casualties. A safe rule is to keep these doors closed, dogged, and locked during all periods of possible enemy action, even though this involves serious inconvenience.

(c) Spread of flooding through piping systems is a serious and difficult condition to control. Sanitary fixtures may allow flooding if sinkage places them below the waterline. Ruptured piping systems such as the fire main is another source. Thorough familiarity with piping systems and careful inspection after damage are important. All valves in piping systems outside of machinery spaces should be kept closed except while such systems are in operation.

(d) Airports and cargo ports below the main deck are sources of danger and unless dogged down at the time of damage may allow additional extensive flooding. Steel covers if fitted on airports should be dogged down whenever damage is possible.

4. Any list which may develop after the flooding of more than two main compartments may be due, partly or entirely, to negative metacentric height and an attempt to bring the ship upright may result in an even greater list to the opposite side. Before correction of list is undertaken following such extensive flooding it should be established by inspection that more flooding has occurred on one side of the ship than the other and, in order to be on the safe side, it should be the aim to correct for somewhat less than the listing moment due to this off center flooding. A ship with negative metacentric height cannot be brought completely upright except by improving stability. For the case under discussion, extensive flooding in combination with off center flooding, the jettisoning of topside weight from the low side may be necessary since it counteracts the listing moment and improves stability at the same time. In any event never attempt to correct list resulting from flooding by pumping liquids from double bottom tanks. To do so will in almost every case make matters worse instead of better. Double bottom tanks which are practically full (more than 90% should however, be pressed completely full in order to reduce free surface.

5. As a rough guide to estimating seaworthiness with respect to stability and buoyancy after severe flooding, the chances of survival may be considered favorable if the weather (main) deck at one side or end is not more or less continuously submerged during whatever rolling and pitching is being experienced and if the flooding has been arrested as shown by inspection of the ship's compartments or from observation that list, bodily sinkage, and trim are not increasing.

6. The Bureau will give consideration to recommended improvements in the existing facilities for handling salt water ballast and to requests for additional vertical access, alterations to piping and ventilation, or extension of interior communication systems which may be found necessary in

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order to carry out the above masures. Paragraph one (1) above calls for ballasting the wash water tanks with sea water; it is assumed that these tanks are served by a separate piping system so that the potable water system will not be contaminated by this practice. The washing water outlets in living spaces should be provided with signs stating that the water is unfit for drinking.

/s/ B. G. Lowrey
By direction