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# MEDICAL RESEARCH LABORATORY



U.S. Naval Submarine Base  
New London.

MEMORANDUM REPORT 53-8

## DESIGN RECOMMENDATIONS FOR MEDICAL MATERIEL STORAGE ABOARD U.S.S. NAUTILUS (SSN-571)

by

Valington F. Borum



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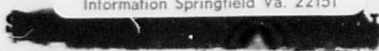
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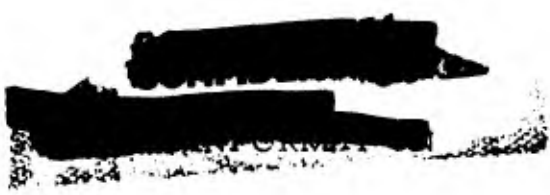
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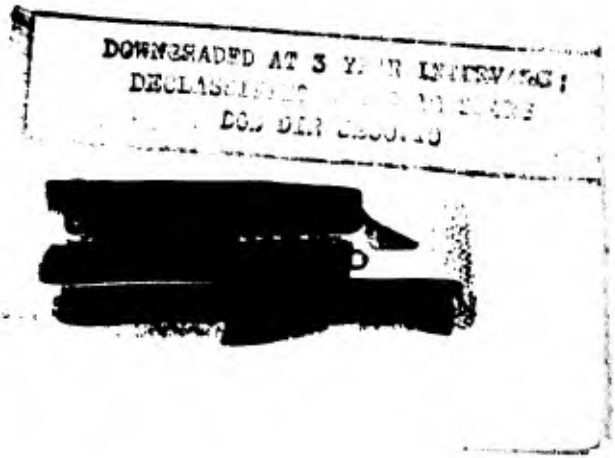
U. S. NAVAL MEDICAL RESEARCH LABORATORY  
U. S. NAVAL SUBMARINE BASE  
NEW LONDON, CONNECTICUT

MEMORANDUM REPORT 53-3

DESIGN RECOMMENDATIONS  
FOR MEDICAL MATERIEL STORAGE ABCARD U.S.S. NAUTILUS  
(SSN- 571 )

Submarine Medicine Section

4 May 1953



  
MEMORANDUM REPORT: DESIGN RECOMMENDATIONS FOR MEDICAL MATERIEL STORAGE ABOARD U.S.S. NAUTILUS (SSN-571)

Data Requested: Comments and recommendations relative to quantities and storage of medical supplies aboard U.S.S. NAUTILUS (SSN-571).

Requested by: (a) SupShips Groton, Conn ltr SSN571/S37/2(252) serial 14303 of 16 Feb 1953 to BuShips with BuShips 1st end. SSN571C1/S27(515) serial 515-556 pf 20 Feb 1953.  
(b) EuMed ltr BUMED-51:bla A4-1/SSN571 of 4 Mar 1953 to OinC NMRL New London.

Material Submitted: Blueprints EEDiv Plans furnished by Supervisor of Shipbuilding, Groton Ct:  
(1) No.3621-06, EuShips No.SSN571-S3304-H-1301005 Rev.B; Crews Qtrs. Galley and Mess Room Arrg't. (CONF.)  
(2) No.3621-14, EuShips No.SSN571-S2405-H-1301010 Rev. B; Control Room Arrg't. (CONF.)  
(3) No.3621-17, BuShips No.SSN571-SC107-H-1301016 Rev. A; Booklet of General Plans (CONF.)  
(4) No. 3621-20, EuShips No. SSN571-S3304-H-1301019 Rev.A; Crews Qtrs. and Washroom Arrg't Fr. 77-84 (CONF.)


Action Taken: This activity conferred with hull planning personnel at the office of Supervisor of Shipbuilding, Groton, Conn., and with various submarine medical officers and with hospital corpsmen who have had independent duty aboard submarines. Previous designs of submarine medical lockers were studied and the material medical needs for subject vessel were discussed during the process of development of design recommendations for medical lockers and other related recommendations.

Recommendations: A. Medical Materiel Stowage:

Supervisor of Shipbuilding, Groton, Conn., has specified dimensions for (1) a main medical locker in the sick bay within the stern compartment of the ships; (2) an auxiliary sick call locker in the crew's mess room; and (3) a bulk storage locker in the control room.

It is felt that ample space is allotted beyond the critical needs for stowage of the present SS type allowance list, so that design may be made flexible enough to accommodate future anticipated changes in the allowance list, as well as changes in packaging design of individual allowed items among different contractors who supply these items.

The present SS type allowance list is thought to be adequate for the needs and capacity of service by the hospital corpsmen aboard the NAUTILUS, which should not differ substantially from those aboard other new type submarines, with the possible exception of additional material related to the radiation protection program, which will be stowed largely apart from medical supplies. The bulk stowage locker will hold some of this extra material.



[REDACTED]

About half of the medical materiel aboard should be stowed in the main medical locker, which is abaft the reactor compartment, and the remaining half stowed in the mess room and control room lockers, which are forward of the reactor compartment. In addition, it is suggested that an emergency kit be kept in a small (1-1/2 cu. ft.) locker in the forward torpedo room readily accessible for use, i.e., not behind the torpedo racks, in the event of the isolation of the forward compartment as the sole escape area.

### B. Medical Locker Design - Outline of Construction

#### 1. Main Medical Locker: (see Figures 1 and 2)

Capacity: 23 cu. ft. approx.

Dimensions overall: 36" wide x 18" deep x 64 1/2" high

Purpose: Main dressing station and medicinal dispersal unit for hospital corpsman on independent duty.

Location: Situated at the after bulkhead of a small room in the starboard side of the after compartment, which serves alternately as a recreation room, sick bay, and quarters for officials making short cruises aboard the ship. The deck area between bunks is 6 ft. 4 in. for and aft, by 3 ft. There are five bunks in the room, three inboard and two outboard, each with a personal locker in the after end, so that the fronts of the five personal lockers together with the front of the medical locker make up a flush surface across the after end of the room, with space above for shelf stowage.

Construction: All-metal, finished appropriately to color scheme of the room. Corrosion resistant steel not indicated, except for the sake of appearance, but all surfaces should be non-porous in order not to harbor bacteria when surfaces are wet. Locks as indicated, all keyed alike.

Design: Four horizontal sections, stacked, with maximal side view diagonal to be less than 25" in order to permit loading through a hatch with inside diameter of 25". Since specified depth is 18", maximum height of a section is 17 1/4". Sections are numbered from top to bottom, I through IV for discussion:

Section I: Contains six medicine drawers with removable metal partitions for cleaning; spring-loaded, bullet-type catch on either side to keep closed, and keeper to prevent drawer falling out; no handle. Acrylic (plexiglas) front which fits into slots at sides and bottom for replacement of broken plexiglas easily; front corners of drawer to be metal because of friction from spring catches. Front bins of drawers are shallow, and present a display of the more commonly used medicines, small bottles and tubes, similar to a large bathroom medicine cabinet, when front doors of the section are opened. It ens in front bins removable without opening drawer.

[REDACTED]

**Section II:** A secretary type deck with drop leaf supported by triangular brackets at each side, similar to supports for stateroom desks now in use aboard submarines. Open bins across the top have a retaining metal lip, for storage of stethoscope, otoscope, blood pressure cuff, etc.. Small drawers with simple catches to keep closed and keepers to prevent falling out; sheet metal; no runners needed. Drawer or locker at space indicated for bulk stowage of narcotics; regulations require a combination lock here. Two spaces to the right narcotic stowage are for stationery and blank forms. Spaces as indicated for journals and logs, and for stowage of sterilizer in lengthwise position, handle toward front.

In lower center space, a removable thick metal strip, 2" wide, fits into slots at each end; a metal dressing jar, cylindrical, 6 1/2" diam. and 7" ht. (Stock No. 7-327-078) fits behind the metal strip, with the remainder of this space filled in with other jars (above present allowance of one jar) or with ointment or other types of jars for sponges, wooden applicators and tongue blades, suture material, alcohol sponges, etc.. The partitions at each side of lower center space are slotted as shown to allow jars and bottles (as for thermometer jar, or jar for sterile forceps) to be strapped to partitions, using webbed cotton straps. A bracket under the top of this space, with 3/8" diam. removable metal rod, holds a 12" roll of cut adhesive plaster (Stock No. 2-035-500).

An adjustable arm fluorescent desk type lamp (Stock No. S6401-73011-39) is bracketed at the right, in front of the bins and drawers, and is stored inside the desk when it is closed

**Section III:** Conventional drawers with runners as shown; locks; catch to keep drawer in, and keeper to prevent falling out; removable metal partitions. Upper drawer is wide, with one bin running its whole width, occupying the front half of the drawer, for splints and other long objects; fore and aft partitions divide the back half of the drawer into four equal bins.

The four smaller drawers are divided into quarters by partitions.

Note that Sections III and IV are 15" high each, to allow for desk height of 30" from deck.

**Section IV:** Including a 3" recessed base, is 15" high, and consists of four units:

(a) Filing drawer on runners, width to accommodate 12" file folders (i.e., health records).

(b) Waste receptacle for used dressings, as shown; hinged at bottom, with spring catch which can be operated by foot so as not to contaminate clean hands of corpsman, who may be wearing sterile gloves. Corrosion resistant steel kick plate in front optional, for closing with foot; keeper to prevent receptacle from opening farther than shown in open position. Accomodate waxed paper bag which can be cut off at top and taped to bin. (Stock No. 5-513-250-Navy ; bags, paper, waste, receptacle, 100s; unit: 1 pkg).

(c) Storage locker, to right and behind waste receptacle, separated from it by metal partition to avoid contamination; door hinges to right or downward. For bulk storage, as bottles in cartons; first aid kit can be kept conveniently just inside door.

(d) Bottle drawer, for large bottles; on runners, with catch and keeper; transverse removable metal partitions divide drawer into four equal bins; no fore and aft partitions.

## 2. Medical Locker in Mess Room: (see Figure 3)

Capacity: 12 cu. ft. approx.

Dimensions: Double door area 35'' wide x 38'' high approx., with bottom of locker about 3'' below bottom of doors. Depth about 10'', with back wall slightly concave vertically due to curvature of hull.

Purpose: Auxiliary dressing and dispensing station forward; also storage for surgical supplies in the event of major surgery on mess table.

Location: Starboard bulkhead of mess room, between mess tables; bottom of doors 3/4'' from deck, level with table tops.

Construction: Built in, all metal; Corrosion resistant steel not indicated, but all surfaces should be non-porous in order not to harbor bacteria when surfaces are wet.

Design: Figure 3 shows only concept, with approximate dimensions. Lower 12 1/2'' to be open storage, with two partitions as shown, each having slots for strapping of bottles and jars to partitions with cotton webbing. Above this are two rows of metal drawers with simple catches and keepers, no locks, no runners; open space for small bins at the side, because of space lost when large doors are open at right angle. Above the drawers in a row of bins with metal retaining lip at bottom.

Upper portion of locker consists of thin sheet metal false fronts with doors having cupboard fasteners, hinging at bottom and supported by small chains when open. Space within has pegs for removable shelves.

## 3. Medical Bulk Storage Locker in Control Room:

Capacity: 14 cu. ft. approx. usable space.

Dimensions: Door area approx. 18'' wide x 36'' high; depth 27''. Bottom of locker about 2'' below bottom of door.

Purpose: Medical storage, bulk.

Location: Starboard forward corner of control room, with door swinging against door to radio room; bottom of door 38'' from deck.

Construction: Built in, all metal.

Design: Because of location in corridor where there is heavy traffic, should not be used for dispensing or dressing. Therefore, should have shelf type construction, for stowage, with suitable retaining strips or bands for holding material in place when the large door is opened.

C. Sick Bay Arrangement: This room in the stern compartment is also to be used as a ship's personnel recreation room and as quarters for visitors on short cruises. For these alternate purposes, there is a drop leaf table 30'' high in the center of the deck area, with only about 10'' between the table and the medical locker aft, and about 18'' between the table and the door forward. The table is in the way when the room is being used for changing dressings or casts, or for tending bed patients; it also constitutes a hazard to a delirious or violent patient who might fall out of bed. Therefore the table should be removable with wing bolts, so the deck is left flush; the table might be stowable under a bunk or on brackets in the overhead.

The bottom bunk tops are 18'' above deck level, convenient for sitting at the table or at the deck; the bunk tops next above the bottom bunks are 44'' above deck level, and hinge downward to become back supports for persons sitting on the lower bunks. This arrangement is good for all usual uses of the room, but in the event of prolonged bed care or of minor surgery during which the patient is in a lying position, neither 18'' or 44'' is convenient height for an attendant who is either sitting or standing. Each of the two bunks which is second above deck level should have an alternate position so that the bunk top is 30'' above the deck, thus coinciding with the desk height. A patient could lie on a bunk which is so arranged, with the upper or lower extremity placed on the desk surface for minor surgery such as suturing, or for intravenous infusions.

These suggestions regarding sick bay arrangement are considered to be feasible modifications, following discussion with personnel at the Office of Supervisor of Shipbuilding, Groton.

D. Miscellaneous Suggestions:

1. An oxygen outlet from the ship's oxygen manifold, with reducer if necessary, and with flow meter calibrated in liters per minute, available in case a critically ill patient should be placed under oxygen. A mask and a makeshift tent should also be available.

2. A water outlet should be located nearby within the stern compartment, for dispensing of oral medication and for patient care. Space within sick bay does not permit a lavatory in the room itself.

3. A book rack of standard stock manufacture should be placed above the lockers, for stowage of medical books and publications.

4. A tubular steel folding stool, stowable in overhead, should be provided.

5. An electrical outlet should be provided for sterilizer, so located as to permit its use at desk level, on top of locker, or on the deck; the latter in the event of rolling of the ship, with possible spilling of boiling water.

6. A table in the mess room should be adaptable for major surgery in the rare instances indicated. A small Castle type auxiliary surgical lamp might be stowed permanently on an adjustable bracket above this table, with possible adjustable brackets for placing of battle lanterns to give multiple light sources and reduce shadows on the operating field.

Report

Prepared

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Approved

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**Figure 1. - Finished Drawing for Main Medical Locker**

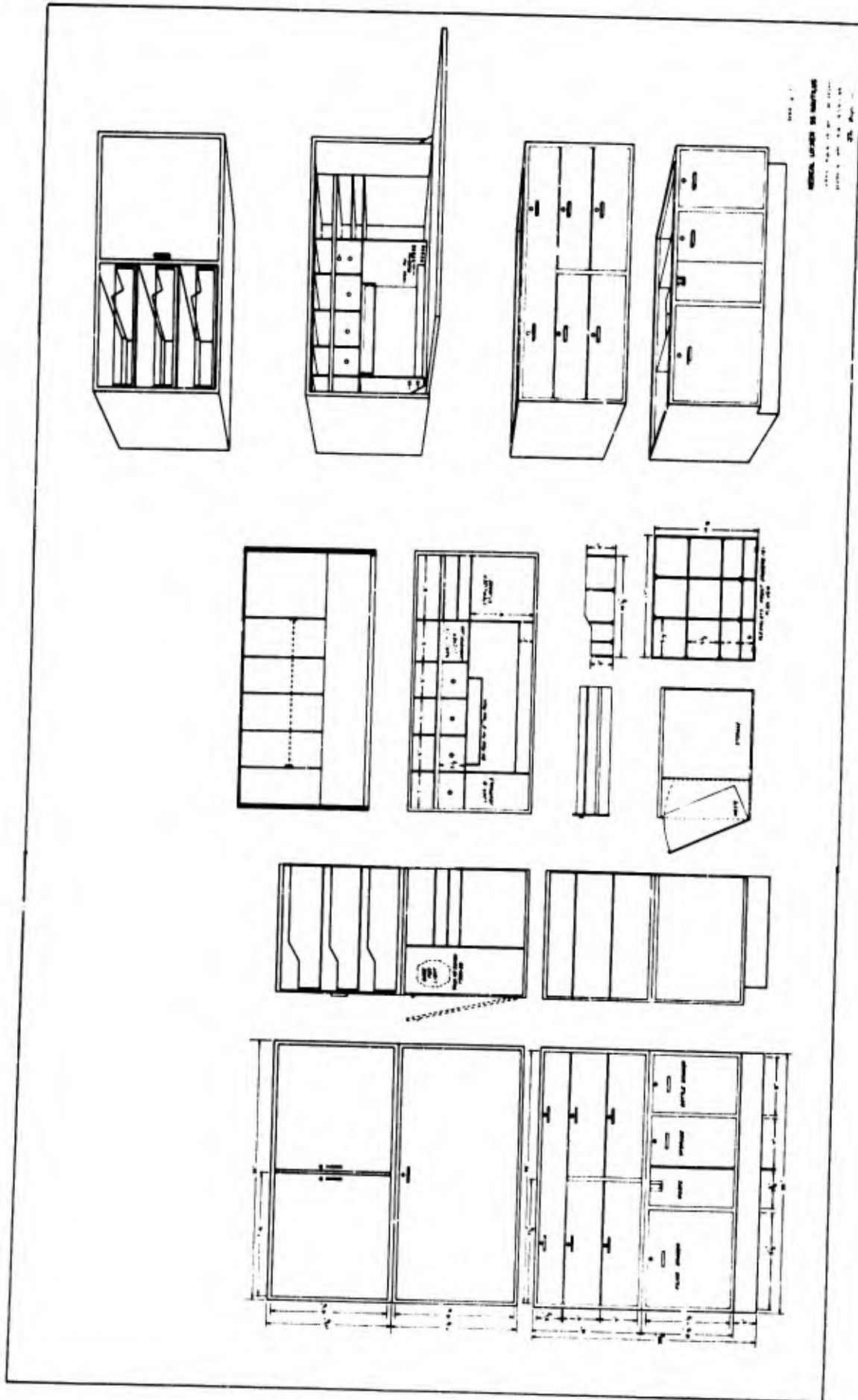


Figure 2. - Working Drawing for Main Medical Locker

