

MIL-STD-1682/12(SH)  
27 October 1976

MILITARY STANDARD

SHIPYARD INSPECTION AND CLEANING  
PROCEDURES FOR SUBMARINES

PART 12

MISSILE CONTROL CENTER  
SSBN 608 CLASS



FSC 1905

MIL-STD-1682/12(SH)  
27 October 1976

DEPARTMENT OF THE NAVY  
NAVAL SEA SYSTEMS COMMAND  
WASHINGTON, D.C. 20362

Shipyards Inspection and Cleaning  
Procedures for Submarines, Missile Control  
Center SSBN 608 Class

MIL-STD-1682-12(SH)

1. This Military Standard is approved for use by the Naval shipyards during overhaul and conversion periods for submarines.

2. Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, Naval Ship Engineering Center, Center Building, SEC 6124, Prince George's Center, Hyattsville, Maryland 20782 by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

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FOREWORD

This part provides inspection and cleaning procedures for the Missile Control Center aboard SSBN 608 Class submarines.

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## 1. SCOPE

1.1 This part provides inspection and cleaning procedures for the Missile Control Center (MCC) and Ventilation System aboard SSBN 608 Class submarines. The basic standard and this part are to be considered as an integral single document.

## 2. REFERENCED DOCUMENTS

2.1 The issues of the following documents in effect on the date of invitation for bids form a part of this standard to the extent specified herein.

### GOVERNMENTAL

#### SPECIFICATION

MIL-D-16791 - Detergents, General Purpose (Liquid, Nonionic)

(Copies of specifications, standards, drawings, and publications required by suppliers in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

## 3. DEFINITIONS

3.1 Clean. Clean is being free of all loose scale, rust, grit, filings, and other foreign substances; and free of oil, grease, and other organic materials.

3.2 Cleaning solvent. Cleaning solvents as used in this standard refer to water-soluble (Type I) liquid detergent.

3.3 Dewpoint. The temperature at which condensation first occurs when a vapor is cooled.

## 4. REQUIREMENTS

### 4.1 General requirement.

4.1.1 Waste solvents shall be discarded in a sanitary sewer system.

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#### 4.2 Safety and precautions.

Note: Listed below are warnings appearing in this procedure. All personnel involved in operating and maintaining equipment must fully understand the warnings.

4.2.1 Supplemental filter material used in this standard is a restricted use item and should be used only during construction and availability periods such as upkeep, conversion, and overhaul. Cyanide gas is generated when filter material burns; therefore, its use is prohibited at all other times.

4.2.2 Do not use flammable cleaning solvents or solvents in spray form.

4.2.3 Do not take MIL-D-16791 cleaning detergent internally. Keep out of eyes. If swallowed, induce vomiting and call a physician; for eyes, flush with plenty of water and get medical attention.

4.2.4 Accomplishing 5.1.7.2 may require entering the air conditioning room when high velocity fans are running. If high velocity fans cannot be secured, ensure that maintenance personnel wear adequate ear protection. Serious hearing loss may result from failure to follow this precaution.

4.2.5 Ensure that proper warning tags are placed at power controller to prevent fans from being inadvertently energized during maintenance.

#### 4.3 Materials.

4.3.1 Materials required to perform normal inspection and cleaning procedures are as follows:

- (a) Containers for cleaning solution
- (b) Cleaning solvent, MIL-D-16791 (NSN 7930-00-282-9699 or equivalent)
- (c) Supplemental filter material (NSN 1G-9330-00-965-0481 or equivalent)
- (d) Portable vacuum cleaner (nonmetallic hose)
- (e) Assortment of wiping cloths
- (f) Lint-free cloth (NSN 7920-00-514-2420)
- (g) Masking tape (roll)
- (h) Thermometer
- (i) Cheesecloth

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## 5. INSPECTION AND CLEANING PROCEDURES

### 5.1 FBM MCC ventilation system inspection and cleaning.

#### WARNING

Ensure that proper warning tags are placed at power controller to prevent fans from being inadvertently energized during maintenance.

5.1.1 Upon removing fans 3 and 4, four-zone chiller unit, and associated piping from the air conditioning room, cover piping opening to the MCC in the air conditioning room. This prevents debris from entering supply plenum.

5.1.2 When fan 38 (MCC booster fan) is removed, cover open ends of piping to prevent debris from entering this piping.

5.1.3 Tape covers over discharge cones, diffuser terminals, and adjustable register supply terminals. Also, tape covers over any openings in the MCC electronic equipment supply and exhaust plenums under the deck.

5.1.4 Cover Fire Control System (FCS) equipment remaining in MCC during overhaul with coated cloth (fire retardant material).

5.1.5 Just prior to reinstalling fan 38, remove all protective covers installed in 5.1.1 through 5.1.3. Vacuum; then, using a mild cleaning solvent and warm water, wipe down accessible areas of piping, ductwork, and plenums. Use flexible wire or other suitable extension to facilitate wipe-down. Use lint-free cloth to wipe dry.

5.1.6 Fan 41, in addition to supplying air to MCC, supplies air to radio central, sonar control room, and electronic equipment and stowage space (EE space). To assure that MCC receives air at close to design air flow and temperature during the early testing stages before ship Ventilation Systems become operational, a preliminary air balance must be accomplished. Preliminary air balance must be accomplished on the supply to the radio room, sonar room, and EE space. This requires that ductwork to those areas be complete and clean. Air balance should be accomplished with fans 6, 41, 38, and 43 operating. Return from MCC to fan 6 should be orificed to 5400 cfm in the air conditioning room. Refer to applicable ventilation, chilled water, and air conditioning control air system drawings for system details.

5.1.7 Immediately prior to initial FCS light-off, perform the following in 5.1.7.1 through 5.1.7.8.

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WARNING

Supplemental filter material used in this standard is a restricted use item and should be used only during construction and availability periods such as upkeep, conversion, and overhaul. Cyanide gas is generated when filter material burns; therefore, its use is prohibited at all other times.

5.1.7.1 Ensure that a clean filter is installed in each ventilation fan in each FCS MK 80 stack. Tape supplemental filter material over each of these filters.

WARNING

Accomplishing 5.1.7.2 may require entering the air conditioning room when high velocity fans are running. If high velocity fans cannot be secured, ensure that maintenance personnel wear adequate ear protection. Serious hearing loss may result from failure to follow this precaution.

5.1.7.2 Ensure that filters listed below are clean. Also, tape supplemental filter material over these filters. These filters are located in the four-unit chiller in the air conditioning room.

Filter no. 61 (coil no. 32 filter)  
Filter no. 64 (coil no. 32 bypass filter)  
Filter no. 63 (coil no. 34 filter)

5.1.7.3 In the MCC, ensure that the following filters are clean and tape supplemental filter material over these filters:

<u>FILTER NUMBER</u>	<u>SERVICE AND LOCATION</u>
35	MCC exhaust port aft, MCC
30	MCC exhaust, MCC
59	MCC exhaust, MCC
45	Miscellaneous EE space exhaust, miscellaneous EE space



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5.1.7.4 Tape supplemental filter material over sound trap (fitting F-60) located in bulkhead that separates the MCC from the crew berthing area. Tape supplemental filter material on crew berthing side of sound trap.

5.1.7.5 Check that chilled water is available to cooling coils 32 and 34.

5.1.7.6 Place cheesecloth over discharge cones, diffuser terminals, and adjustable register supply terminals.

5.1.7.7 Energize fans 41, 43, 6, and 38 for 10 minutes and secure. Because the Ship Ventilation System may not be complete at this time, it may be necessary to open the door to the air conditioning room to supply fans in operation with sufficient air flow.

5.1.7.8 Remove and inspect each piece of cheesecloth for dirt. If dirt or other foreign matter is accumulating, replace cheesecloth with clean cheesecloth and repeat 5.1.7.7 and 5.1.7.8 until all areas are receiving clean air.

5.1.8 After the FCS is energized and continuing until system turnover to Ship Force, perform the following.

5.1.8.1 Twice weekly, during early stages of testing, remove and clean filters listed below. Also, remove and tape clean supplemental filter material over these filters. Defer to WARNING listed prior to 5.1.7.2 when accomplishing first 3 items below.

Filter no. 61 (coil no. 32 filter)  
Filter no. 64 (coil no. 32 bypass filter)  
Filter no. 63 (coil no. 34 filter)  
Filter no. 35, MCC exhaust port (aft)  
Filter no. 30, MCC exhaust  
Filter no. 59, MCC exhaust  
Filter no. 45, miscellaneous EE space exhaust  
Fire control system equipment blower motor filters

5.1.8.2 Twice weekly during early testing stages, remove and tape clean supplemental filter material over sound trap (fitting F-60).

Notes: 1. During the latter testing stages when the workload/traffic in the MCC has reduced, it will only be necessary to clean filters and replace supplemental filter material in 5.1.8.1 and 5.1.8.2 once each week. The decision to clean filters once vs twice each week will be made by the Fire Control Test Director and will be based on the results of previous filter cleaning.

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2. In latter testing stages when all Ship Ventilation Systems become operational and Ventilation Systems are balanced, the air supplied to the MCC will be as clean as possible and supplied at design flow rates under the following conditions:

- (a) The following fans should be operating in FAST mode:

<u>FAN NUMBER</u>	<u>SERVICE</u>
2	Ship's supply system aft
40	Supply zone no. 1
41	Supply zone no. 2
42	Supply zone no. 3
43	Supply zone no. 4
44	Supply booster crews' quarters (starboard)
45	Supply booster crews' quarters (port)
38	MCC booster
5	Battery exhaust
6	Main ship's exhaust
7	High-pressure forward exhaust

- (b) If operable, the following electrostatic precipitators should be clean and operating:

EP 1, galley exhaust in galley

EP 2, ship's control center exhaust in air conditioning room

EP 4, battery supply in crews' quarters

- (c) The following filters should be clean and properly installed:

<u>FILTER NUMBER</u>	<u>SERVICE AND LOCATION</u>
69	Natural return, aft bulkhead
60	Fan 40/cooling coil 31, air conditioning room
61	Fan 41/cooling coil 32, air conditioning room
62	Fan 42/cooling coil 33, air conditioning room

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<u>FILTER NUMBER</u>	<u>SERVICE AND LOCATION (Continued)</u>
63	Fan 43/cooling coil 34, air conditioning room
64	Fan 41/bypass cooling coil 32, air conditioning room
65	Fan 6/2nd level passageway, 2nd level passageway
66	Fan 6/ship control center, navigation center
59	MCC exhaust, MCC
45	Miscellaneous EE space exhaust, miscellaneous EE space
35	MCC exhaust port aft, MCC
30	MCC exhaust, MCC

## 5.2 FBM MCC inspection and cleaning.

5.2.1 After ship arrives and overhaul has started, perform the following.

5.2.1.1 Inspect MCC daily, and, if required, clean as follows:

- (a) Remove heavy accumulations of dust, chips, etc., from work surfaces, exposed equipment, wire raceways, readily accessible areas of overhead, exposed foundations, deck, etc., using a vacuum cleaner or clean, lint-free cloths as required.
- (b) Empty refuse daily.

5.2.1.2 Maintain environmental conditions to protect all MCC equipment against dust, dirt, moisture, or other foreign matter.

5.2.1.3 Once each 8-hour shift, take psychrometer readings to ensure that MCC environmental conditions do not fall in area 4 of figure 1 (areas 1, 2, and 3 are not applicable to this SSBN Class).

5.2.1.4 Daily check that equipments exposed to possible damage are protected by suitable padding or covers.

5.2.1.5 Ensure that any welding or grinding activities are isolated from other MCC sections by suitable containment.

5.2.1.6 Just prior to MK 80 light-off, onload and energize 3 dehumidifiers. Monitor splash pans daily and empty as necessary.

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A SAMPLE DETERMINATION OF MCC DEW POINT TEMPERATURE FROM MCC WET AND DRY BULB TEMPERATURE IS SHOWN.

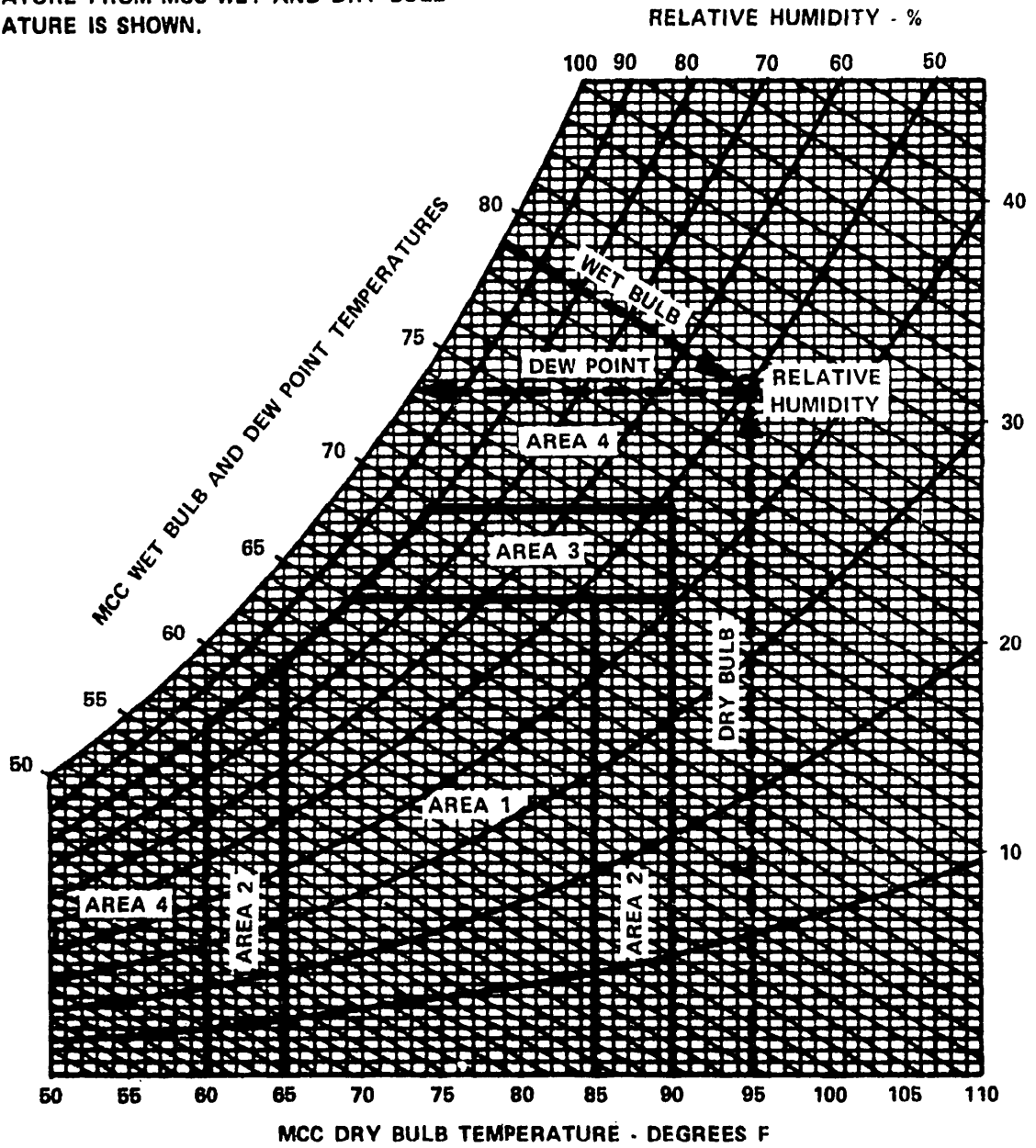


Figure 1. Psychrometric chart

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5.2.2 Once the MK 80 System is energized, perform the following.

5.2.2.1 Clean MCC as indicated below:

- (a) Install clean vacuum cleaner filter and vacuum deck and any protective coverings to remove dust accumulations, dirt, or other foreign matter (at least daily).

Note: Deck discoloration remaining after vacuuming is allowable; however, all loose particles must be removed.

- (b) When adhered dirt accumulation or discoloration is excessive, wet wash the deck, using cleaner, detergent, or suitable solvent.
- (c) Using clean wiping cloths and/or vacuum cleaner, remove dust from work surfaces and equipment (daily).

5.2.2.2 Maintain MCC environment as follows:

- (a) When FCS equipment is operating, install thermometer at intake flue of MMU equipment door (missile motion unit 6A2).
- (b) Monitor thermometer twice each 8-hour shift and ensure that MCC is maintained within the following conditions:

85°F (29.4°C) maximum and 50% RH maximum  
65°F (18.3°C) minimum and 50% RH maximum

Note: In this Ventilation System, MCC dewpoint is not a problem as MCC air is used to cool equipment.

Preparing activity:  
Navy - SH  
(Project 1905-N006-12)

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