



DEPARTMENT OF THE NAVY  
OFFICE OF THE CHIEF OF NAVAL OPERATIONS  
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IN REPLY REFER TO  
OPNAVINST 4790.13A  
N43  
31 Oct 07

OPNAV INSTRUCTION 4790.13A

From: Chief of Naval Operations

Subj: MAINTENANCE OF SURFACE SHIP ELECTRONIC EQUIPMENT

Ref: (a) OPNAVINST 4700.7 Series  
(b) MIL-HDBK-2165, 31 Jul 95  
(c) SECNAVINST 4105.1A  
(d) NAVSUP P485  
(e) NAVSUPINST 4423.29  
(f) OPNAVINST 3960.16A  
(g) CFFC 4790.3

Encl: (1) Definitions  
(2) List of Acronyms

1. Purpose. To establish the maintenance policy for surface ship electronic equipment.
2. Cancellation. OPNAVINST 4790.13.
3. Scope and Applicability. This instruction applies to all surface ships of the United States Navy with electronic equipment and the System Commands (SYSCOM) that acquire and support this equipment. This includes electronic equipment in combat systems; electronic components in hull, mechanical, and electrical systems; and electronics within associated support equipment. This instruction does not apply to nuclear propulsion, fleet ballistic missile/strategic weapons, and avionics systems.
4. Definitions. Applicable definitions are in enclosure (1).
5. Action. It is the policy of the Chief of Naval Operations (CNO) as stated in reference (a) that maintenance will be accomplished at maintenance echelons that can best ensure proper accomplishment, taking into consideration applicable laws, urgency, priority, crew impact, capability, capacity and total cost. There are three levels of maintenance for electronic equipment: organizational, intermediate, and depot.

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a. The SYSCOMs have the responsibility to plan and provide for Integrated Logistic Support (ILS) for surface ship electronic equipment and to formulate a maintenance strategy supported by a Level of Repair Analysis (LORA) and documented in a Maintenance Plan. The assignment of tasks to a specific maintenance level is based on operational requirements, mission essentiality, existing maintenance capabilities and capacity ashore and afloat, as well as the LORA.

b. The Miniature/Microminiature (2M) Module Test and Repair (MTR) Program has significantly improved the organic capability of all maintenance levels to repair Circuit Card Assemblies (CCA) and Electronic Modules (EM). Enclosure (5) of reference (a) identifies the policy and responsibilities for the 2M MTR Program. Program managers must take into account the 2M MTR capability at the organizational, intermediate, and depot levels when developing maintenance strategies.

c. The Progressive Depot Level Repair (PDLR) concept shall be implemented for all depot repairables and selected consumable CCA/EMs, including those supported by Performance Based Logistics (PBL) contracts, when practical. Under this concept, failed CCA/EMs beyond the capability or capacity at the organizational level first go to the intermediate level (I-level) for screening and repair. When operational commitments dictate and Ready-for-Issue (RFI) assets are readily available, a failed CCA/EM can be turned directly into Supply from the organizational level. If a DLR CCA/EM is beyond I-level capability or capacity, it goes to the depot for repair or condemnation. RFI status determination must follow the policy in reference (d). Both the design and maintenance plans should support progressive repair. Progressive repair encourages rapid turnaround of unserviceable items at the lowest practical level, reduces OPTAR expenses, improves readiness, and can reduce requirements for wholesale and retail spares. If the program manager does not employ PDLR, they must justify this during the ILS certification process.

d. The Source, Maintenance, and Recoverability (SM&R) code identifies the maintenance levels that may remove, repair, replace, or condemn an item. The SYSCOMs determine the SM&R code when developing the maintenance plan. The selected SM&R code shall assign repairs to the lowest practical level. CCA/EMs with diagnostic procedures developed by the 2M MTR

Program will be identified by the use of the sixth position of the SM&R code per reference (e).

e. Program Managers shall provide required ILS to the maintenance activities identified in the maintenance plan. This includes spare parts, training, facilities, support equipment, and documentation. The 2M MTR Program provides standard diagnostic and repair equipment, as well as piece part allowances, to ashore and afloat activities authorized 2M MTR capability.

f. Reference (c) provides the Navy's preferred approach for establishing and conducting a testability program, and interoperability, reliability, maintainability, and logistics support at the system, subsystem, equipment, assembly, and module levels. The SYSCOMS must design testability and diagnostic effectiveness into systems and equipment. Through LORA and trade-off analyses, the Program Manager should develop a testing concept that defines the use of Built-In Test (BIT), off-line General Purpose Electronic Test Equipment (GPETE), Automatic Test Systems (ATS), and the use of Distance Support to the extent practical. The test concept should take into account the Navy's inventory of test equipment and comply with the Test Measuring and Diagnostics Equipment (TMDE), ATS, and Metrology and Calibration (METCAL) policy of reference (f).

g. For existing systems with inadequate Supply Material Availability or ineffective maintenance plans, CNO may direct the SYSCOMS to establish broader maintenance capability. This determination will be based on operational requirements, fleet recommendations, and available resources.

## 6. Responsibilities.

### a. Chief of Naval Operations.

(1) OPNAV N41, in accordance with reference (c), shall review ACAT I and II programs to ensure the ILS plans consider three levels of maintenance and progressive depot level repair.

### (2) OPNAV N43

a. Receive requirement input from Commander, Naval Sea Systems Command for the 2-M Program.

b. Maintain Maintenance of Surface Ship Electronic Equipment policy.

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## b. Commander, Naval Sea Systems Command.

(1) Incorporate the policies of this instruction for newly developed or redesigned electronic systems/equipment during acquisition.

(2) Incorporate the policies of this instruction for existing electronic systems when the present maintenance concept and logistic support do not meet the established requirements for operational readiness and the equipment meets the mission essentiality requirements.

(3) Serve as the Program Manager for the Miniature/Microminiature (2M) Module Test and Repair (MTR) Program.

(4) Review the implementation of these policies during ILS certification process for ACAT III and IV programs.

## c. Commander, Space and Naval Warfare Systems Command.

(1) Incorporate the policies of this instruction for newly developed or redesigned electronic systems/equipment during acquisition.

(2) Incorporate the policies of this instruction for in-service Mission Essential electronic systems when warranted by In-Service Reviews (ISR) indicating Logistics Delay threshold requirements are not being met and/or when supported by a LORA update.

(3) Review the implementation of these policies during Independent Logistics Assessments (ILA) for all programs, per reference (c).

## d. Commander, Naval Air Systems Command.

(1) Incorporate the policies of this instruction for newly developed or redesigned shipboard electronic systems/equipment during acquisition.

(2) Incorporate the policies of this instruction for existing shipboard electronic systems when the present maintenance concept and logistic support do not meet the established requirements for operational readiness and the equipment meets the mission essentiality requirements.

(3) Review the implementation of these policies during ILS certification process for ACAT III and IV programs.

e. Commander, Naval Supply Systems Command.

(1) Ensure that supply procedures are in consonance with policy.

(2) Ensure that supply support is provided under the maintenance requirements developed by the SYSCOMs under this instruction.

f. Commander, U. S. Fleet Forces Command.

(1) Review ACAT I, II, and III logistic support plans before first fleet installation.

(2) Support the policies in this instruction by ensuring maintenance is accomplished in accordance with approved maintenance plans and by operationally administering the 2M MTR Program per reference (g).



M. E. LOOSE  
Vice Admiral, CEC, U.S. Navy  
Deputy Chief of Naval Operations  
(Fleet Readiness and Logistics)

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## DEFINITIONS

Combat Systems. Generally, this includes devices and systems in the fields of detection and tracking, recognition and identification, communications, aids to navigation, weapons control and evaluation, electronic countermeasures, and test equipment. Combat Systems usually have electro-mechanical support systems that are essential for operation, such as power supplies, hoists, cooling and air systems.

Depot Maintenance. The third level of maintenance requires skills and facilities beyond the capability of the organizational and intermediate levels. The depot level is comprised of naval and private shipyards, the ship repair facilities, and designated overhaul points. Depot maintenance includes major rework, full restoration, manufacturing, large scale repairs, and modernization. Furthermore, depots support lower levels with engineers and technical assistance.

Intermediate Maintenance. The second level of maintenance provides support beyond the capability of the organizational level. The intermediate level is comprised of Navy personnel on tenders or at Regional Maintenance Centers (RMC). Intermediate maintenance includes calibration, repair or replacement of damaged parts, emergency fabrication of unavailable parts, verification testing, and fault isolation. Furthermore, intermediate maintenance supports the organization levels with technical assistance.

Maintenance. This is the action of keeping material in good repair. Maintenance includes inspection, service, repair, modification, modernization, and restoration.

Maintenance Plan. The plan that translates the three level maintenance concept into a set of tasks that will ensure that the equipment meets its requirements for availability. The acquisition managers use the maintenance plan to develop and procure the logistic support for the three maintenance levels.

Organizational Maintenance. The first level of maintenance is the user organization. It consists of the preventive and corrective maintenance performed by the ship's crew or shore

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personnel assigned to supplement the ship's force and perform onboard preventative or corrective maintenance. It consists of equipment operation, inspection, service, replacement of parts, and repairs.

Progressive Depot Level Repair (PDLR). This refers to the sequential movement of unservicable depot level repairable (DLRs) from the ship to the depot. DLR with SM&R codes for removal at the organizational level should go first to the intermediate level for verification and repair. If the DLR is beyond the capability of the intermediate level, then it should go to the depot for repair.

Source, Maintenance, and Recoverability (SM&R) Code. The SM&R Code identifies the lowest maintenance level that may repair, replace, or condemn an item. The SYSCOM determines the SM&R code when developing the maintenance plan.

Testability. A design characteristic which allows the status (operable, inoperable, or degraded) of an item to be determined and the isolation of faults within the item to be performed in a timely manner.

**LIST OF ACRONYMS**

2M	Miniature/Microminiature Electronic Repair
ACAT	Acquisition Category
ATS	Automatic Test Systems
BIT	Built-in-Test
CCA	Circuit Card Assemblies
CNO	Chief of Naval Operations
DLR	Depot Level Repairable
EM	Electronic Modules
GPETE	General Purpose Electronic Test Equipment
ILS	Integrated Logistic Support
LORA	Level of Repair Analysis
METCAL	Metrology and Calibration
MTR	Module Test and Repair
OPTAR	Operational Target Funds
PBL	Performance Based Logistics
PDLR	Progressive Depot Level Repair
RFI	Ready-for-Issue
RMC	Regional Maintenance Center
SM&R	Source, Maintainability, and Recoverability
SYSCOM	System Command
TMDE	Test Measuring and Diagnostics Equipment