



DEPARTMENT OF THE NAVY
NAVAL SEA SYSTEMS COMMAND
WASHINGTON, DC 20362-5101

IN REPLY REFER TO
NAVSEAINST 4700.16
OPR PMS331
10 OCT 89

NAVSEA INSTRUCTION 4700.16

From: Commander, Naval Sea Systems Command

Subj: INTERMEDIATE MAINTENANCE LEVEL REQUIREMENTS AND REPAIR CAPABILITY
IN SUPPORT OF SHIP SYSTEMS AND EQUIPMENT

Ref: (a) OPNAVINST 5000.49A
(b) OPNAVINST 4700.7H
(c) NAVSEAINST 5000.39
(d) NAVSEAINST 4790.17A
(e) MIL-STD 1390B of 1 Dec 76, Level of Repair
(f) MIL-STD 1388-1A/-2A of 15 Oct 73, Logistic Support Analysis
(g) NAVSUPINST 4423.14B
(h) NAVSEAINST 5400.86
(i) NAVSHIPS S9810-AA-GTP-010/IMA of Feb 88, Naval Ships Intermediate Maintenance Activity (IMA) Work Center Requirements Manual

Encl: (1) Typical Organizational, Intermediate and Depot Level Repair Capability Relationships
(2) I-Level Maintenance Capability Assessment

1. Purpose. To establish Command policy and procedures for planning, programming, budgeting, scheduling, installing, and supporting Intermediate Level (I-Level) maintenance support for weapons or ship systems and equipment.

2. Scope. This instruction applies to all shipboard systems and equipment under the cognizance of the Naval Sea Systems Command (NAVSEA). This includes systems and equipment introduced as part of a new ship class design and existing systems and equipment already installed in ships but now being considered for intermediate level maintenance support. It applies to all proposed or designated systems and equipment to be repaired partially or completely by an I-Level repair facility, except for systems and equipment under the cognizance of the Nuclear Power Directorate (SEA 08).

3. Background

a. Reference (a) describes the policy of the Chief of Naval Operations (CNO) regarding Integrated Logistic Support (ILS) in the acquisition process. In particular, it states that three levels of maintenance shall be considered for all repairable systems during the Logistic Support Analysis (LSA) process and that maintenance shall be performed at the lowest level where it is feasible to establish capability. It describes an acquisition process in which, as it proceeds through the various development phases, maintenance decisions become increasingly specific with the eventual assignment of individual repairable items to one of the three levels of maintenance. Reference (b) reiterates this policy by stating that elements of the Navy's ship maintenance strategy includes the use of engineered maintenance requirements performed at the lowest level of maintenance. It requires that the

support capability resident at the respective maintenance levels be integrated with the support planning throughout the ship's life cycle. Reference (c) implements reference (a) within NAVSEA and describes the specific actions required of NAVSEA Acquisition Managers. Reference (d) sets forth policies regarding repair of shipboard electronics equipment, addressed Progressive Depot Level Repair (PDLR), and allocates 2M and STEEP Automated Test Equipment to certain IMAs.

b. Reference (b) also defines intermediate maintenance as a second level of maintenance within the capability and the responsibility of the operating forces. The intermediate level consists of Tenders, Shore Intermediate Maintenance Activities (SIMAs), Naval Submarine Support Facilities (NSSFs), and Naval Reserve Maintenance Facilities (NRMFs) manned by naval personnel with specialized training and facilities.

c. Reference (e) provides the standard Level of Repair Analysis (LORA) methodology and states that the purpose of LORA is to examine the various repair alternatives to establish the most economical life cycle support cost for Navy material. Reference (f) describes the Logistic Support Analysis (LSA) methodology, which encompasses the LORA.

d. Reference (g) provides instructions for the assignment of Source, Maintenance and Recoverability (SM&R) codes, a portion of which identifies the maintenance level that can remove and replace, repair, or condemn repairables. These codes provide great flexibility to the Acquisition Manager in maintenance planning. One example is the concept of the Progressive Depot Level Repair (PDLR). A PDLR is a repairable which must be repaired or condemned at the depot level according to the recoverability code, but which can be repaired or tested and checked at a lower maintenance level according to the SM&R code. (PDLRs must be sent to the depot activity when it is beyond the maintenance capability of the intermediate maintenance level authorized by the repair maintenance code).

e. Reference (h) establishes the Intermediate Maintenance Activity Support Office under NAVSEA (PMS331). This office is chartered to coordinate efforts between the Acquisition Offices and the Fleet, to assist with the influx of requirements on Fleet resources (SIMAs and tenders), to manage the upgrades of the I-Level facilities to meet these new responsibilities, and to provide the associated personnel requirements for Fleet introduction to the Naval Military Personnel Command (NMPC). This coordination effort provides visibility of the total planned resource requirements, vice individual Program Managers attempting to plan support from Fleet resources that may be dedicated to other programs. Part of this effort results in the definition of priorities for the introduction of new I-Level capabilities in order to avoid large peaks in facility and personnel requirements, avoid redundancy of efforts and costs, and to ensure a smooth transition of responsibility to the I-Level. I-Level repair capability should be considered equivalent to that needed in

support of systems and equipment engaged in a forward deployed environment in wartime.

f. Enclosure (1) provides typical organizational, intermediate, and depot repair level relationships.

4. Discussion. The establishment of the Intermediate Maintenance Activity Support Office was in direct response to the need to improve the effectiveness and utilization of I-Level maintenance. A primary function of this office is to develop a working procedure for the introduction of new capabilities into an IMA as the result of new systems and equipment acquisition or the transfer of repair capability from another level. The management focus provided by this office is to increase:

a. Fleet (Type Commander) direct involvement in assigning and developing I-Level capabilities.

b. Preparation of full I-Level ILS review prior to acceptance of repair responsibility.

c. The number of approved I-Level repair procedures.

5. Policy

a. Adequate consideration of I-Level capabilities should be ensured during the acquisition process. In particular, this is essential during the assessment of the results from Failure Modes, Effects, and Criticality Analyses (FMECA), LORA, and, subsequently, when assigning SM&R codes to repairables.

b. All additions or modifications to I-Level capabilities shall have the specific concurrence of the cognizant Fleet or Type Commander.

c. Before introducing a new capability, a thorough analysis and implementation of ILS requirements must be completed to ensure the systems and equipment can be properly supported at the I-Level for the long term, that the quality of repair will be assured, and that training of I-Level personnel will be successful. An analysis of workload should also be conducted.

6. Responsibilities

a. Acquisition Managers are responsible for:

(1) Developing a list of potential I-Level repair candidates for each system and equipment being developed.

(2) Accomplishment of a LORA for each repairable item.

(3) Identifying the IMAs which are considered as potential repair sites for each system and equipment being developed.

(4) Developing workload estimates for each I-Level repair candidate.

(5) Identifying for each I-Level candidate the support equipment, support material, personnel skills and special requirements necessary to repair the item.

(6) Providing to the Intermediate Maintenance Activity Support Office the information developed in (1) through (5) above.

(7) Ensuring systems and equipment suppliers are contractually required to provide appropriate technical documentation and data such as test procedures, drawings, manuals, and repair procedures necessary for the repair of all accepted I-Level candidates. (Note: If the candidate is not accepted, this is required for depot only).

(8) Monitoring the provisioning process for accepted I-Level repairables, with particular attention to spare and repair part stock levels established to support the IMA maintenance actions.

(9) Providing special tools, jigs, fixtures and special test equipment required to maintain the accepted I-Level candidates.

b. The Intermediate Maintenance Activity Support Office is responsible for:

(1) Reviewing requirements identified by the Acquisition Manager and, where appropriate, will recommend and assist in implementing alternative courses of action. In conjunction with OPNAV, the Type Commander and the Acquisition Manager, the Intermediate Maintenance Activity Support Office will take prompt and appropriate action to ensure that resources required to support I-Level repair will be available. This includes the necessary manpower, training, technical documentation, parts support, equipment and facilities. Resources should be available when the systems and equipment enter the Fleet.

(2) Maintaining close liaison with Type Commanders and maintaining an IMA capabilities data base to ensure that current information regarding IMA capabilities and capacities is available.

(3) Coordinating NAVSEA efforts and conducting liaison in support of intermediate maintenance activities.

(4) Ensuring the development of validated work procedures when repairable equipment is assigned for I-Level maintenance.

(5) Confirming with Type Commanders that all requirements for introducing a new repair capability at a specific I-Level facility have been successfully met prior to acceptance.

(6) Ensuring the cost-effectiveness of inducting a new repair capability in the I-Level based on the anticipated I-Level workload.

7. Procedures. To ensure adequate consideration and use of I-Level maintenance in accordance with the ILS policy and processes defined in references (a) and (f), the following procedures apply:

a. The Acquisition Manager will determine if the item is an I-Level candidate. If, during the LORA process required by reference (c), it appears that an item is an I-Level candidate, the Acquisition Manager will use enclosures (1) and (2) and reference (i) to make an initial determination if generic I-Level capability might exist. If it appears that capability does not exist, but the LORA results indicate that enhanced ship self-sustainability and training would result from accomplishing repairs at the I-Level, the Acquisition Manager will contact NAVSEA (PMS331) to assist in the establishment of specific repair capabilities. Reference (c) describes the LORA process.

b. Where the capability already exists or is to be established, the Acquisition Manager should, with the assistance of NAVSEA (PMS331):

(1) Estimate required manning levels of qualified I-Level personnel using standards-based time values to the extent that such data are available.

(2) Review existing ratings, skills, and Navy Enlisted Codes (NECs) to determine if new ratings or NECs are required and the quantities required.

(3) Identify special training requirements for existing ratings or NECs.

(4) Determine I-Level support and test equipment that will be needed and the associated logistic support actions for such equipment.

(5) Determine special requirements for technical data to support I-Level repair.

(6) Identify any special supply interim support actions needed to provide secondary items needed for I-Level repair; determine if Provisioning Technical Documentation (PTD) and Allowance Parts List (APL) or other allowance documentation exists.

(7) Determine if Preventive Maintenance System (PMS) has been specified; if Maintenance Repair Cards (MRCs) have been established; and,

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if repair standards and or specifications exist. Confirm that documentation meets applicable military standards.

(8) Determine if any modifications to IMA facilities will be required. If so, what certification requirements may exist.

(9) Determine if existing technical documentation is adequate and initiate corrective action, if needed.

(10) Identify the schedule for introduction of ship equipment into the Fleet and the life expectancy for the equipment.

(11) Determine the time required and plan for interim depot support until I-Level support is available.

(12) Forward these requirements to NAVSEA (PMS331) for coordination with applicable Type Commanders. Enclosure (2) is an assessment provided to assist in ensuring that all necessary programmatic and logistic support considerations have been made prior to introduction of a new capability.

c. Items assigned to the I-Level for source, maintenance, or recoverability as a result of the LORA decisions will be included in the I-Level section of the Maintenance Plan. Reference (d) prescribes the SM&R codes to be assigned to system equipment.



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24 Type Commanders (less 24H and 24J)
C84 COMNAVSEASYSCOM Shore Based Detachments
FKA1 System Commands (less FKA1G)
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Naval Publications and Printing Service Office, NDW
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**TYPICAL
ORGANIZATIONAL, INTERMEDIATE, AND DEPOT-LEVEL -
REPAIR CAPABILITY RELATIONSHIPS**

Type of Repair

Level of Repair

COMPONENT

ELECTRICAL MOTOR DRIVEN MN. CONDENSATE PUMP	O - LEVEL	IMA/ SIMA	DEPOT/ SRF
1. PACKING GLAND LEAKING			
Replace Packing	▲	1	1
2. LOW PUMP OUTPUT			
Replace Impeller Rings	▲	1	1
Manufacture Rings	▲	▲	▲
Replace Wearing Rings	▲	1	
Manufacture rings	▲	▲	▲
Replace Casing Rings	▲	1	1
Manufacture Rings	▲	▲	▲
3. PUMP PMS			
Check Impeller Clearance	▲		
Repack Coupling Grid	▲		
Check Pump for Excess Wear	▲		
4. CRACKED PUMP CASING			
Weld Crack		▲	▲
Resurface/Machine		▲	▲
Replace Casing	▲	▲	▲
5. SHAFT REPAIR			
Manufacture Shaft		▲	▲
Replace Shaft	▲		
Manufacture Key Way		▲	▲
Sheared Key Way			
Resurface		▲	▲
Electro Plate		▲	▲
6. BURNT MOTOR WINDING			
Electric Motor Rewind/Bake/Dip/Test		▲	▲
NOTE:			
1. When component is being overhauled.			

**TYPICAL
ORGANIZATIONAL, INTERMEDIATE, AND DEPOT-LEVEL
REPAIR CAPABILITY RELATIONSHIPS**

Type of Repair

Level of Repair

COMPONENT :

1200 lb MN. STEAM VALVE	O - LEVEL	IMA/ SIMA	DEPOT/ SRF
1. VALVE LEAKING (Valve Seat Pitted)			
LAP Seat (Hard)	▲	▲	▲
Resurface Seat (Mach)		▲	▲
Replace Silver Seal	▲	1	1
2. VALVE OPERATION (Bent Stem)			
Replace Stem	▲	▲	▲
Manufacture Stem		▲	▲
3. REPACK VALVE	▲	1	1
4. REPLACE LAGGING PAD	▲	2	2
Manufacture Pad		▲	▲
<p>NOTE:</p> <p>1. When component is being overhauled.</p> <p>2. When valve is installed by other than ships force.</p>			

**TYPICAL
ORGANIZATIONAL, INTERMEDIATE, AND DEPOT-LEVEL
REPAIR CAPABILITY RELATIONSHIPS**

Type of Repair

Level of Repair

COMPONENT :

3666 - 10K KIF Electronic Press. Calibrator	O - LEVEL	IMA/ SIMA	DEPOT/ SRF
1. CALIBRATE UNIT (1)			
Functional Test		▲	▲
Modem Test		▲	▲
Electronic Test		▲	▲
Pressure Test		▲	▲
2. REPAIR UNIT (3)			
Alignment		▲	▲
Replace Press Lines		▲	▲
Replace Transducer		▲	▲
Replace Printer Unit		▲	▲
3. PCB REPAIR			
Replace PCB		▲	▲
Replace PCC		▲	▲
Replace Micro Processor		2	2
Replace Transistors		2	2
4. ELECTRICAL REPAIR			
Test for Short	▲	▲	▲
Repair		▲	▲
<p>NOTE:</p> <p>1. FCA Standard - Can only be calibrated by the next higher echelon.</p> <p>2. Performed by facilities having 2M repair capabilities.</p> <p>3. Disassembly of unit by other than repair facility voids calibration.</p>			

I-LEVEL MAINTENANCE CAPABILITY ASSESSMENT

A complete assessment is required to be submitted by the Acquisition Manager to NAVSEA (PMS331) for each item before a new or increased I-Level capability can be introduced. PMS331 will obtain Type Commander concurrence based upon the completed check list submitted.

EQUIPMENT NAME/NONEMCLATURE: _____

NSN #: _____ EXPECTED POPULATION: _____

CLASS/HULL APPLICABILITY: _____

COGNIZANT MAINTENANCE PLANNING ACQUISITION MANAGER'S CODE, TEL. NR.:

PROGRAMMATIC ITEMS

1. What are the corrective (repair) maintenance requirements associated with the repairable item?

2. Will these requirements necessitate a new or increased I-Level capability?

YES NO UNKNOWN

3. Will the need have applicability to all IMAs or will it be restricted to selected sites?

APPLIES TO ALL

APPLIES TO THOSE LISTED BELOW

4. When is the capability required to be operational?

MONTH: _____ YEAR: _____

5. What is the frequency of repair? _____

6. Will ship sustainability and enlisted personnel training be enhanced by assignment to the I-Level?

YES NO

7. Are there any different requirements during wartime as opposed to peacetime?

YES NO { } If YES, LIST BELOW

LOGISTIC ITEMS

1. HUMAN ENGINEERING & PERSONNEL

a. Has the Human Engineering Design Approach Document and the Human Engineering Test and Evaluation Plan for the Maintainer been prepared?

YES NO

b. Will new or special NECs be needed? Will any NECs become obsolete?

NO NEW NECs THE FOLLOWING NEW NECs REQUIRED:

NO OBSOLETE NECs FOLLOWING NECs ARE OBSOLETE:

2. MAINTENANCE PLANNING

a. Have the I-Level 2M program requirements been validated?

YES NO

b. Have the requirements for I-Level Maintenance Assist Modules (MAMs) been validated?

YES NO

c. Has the I-Level Maintenance Plan been published?

YES NO

d. Have the intermediate level maintenance requirements been validated?

YES NO

3. SUPPLY SUPPORT

a. Is supply support identified?

YES NO

b. Are repair parts available within the supply system now, or is interim support available elsewhere?

WITHIN SUPPLY SYSTEM INTERIM SUPPORT AVAILABLE

NOT AVAILABLE

c. Is there an APL or other allowance documentation available or in development?

AVAILABLE IN DEVELOPMENT NOT AVAILABLE

4. SUPPORT AND TEST EQUIPMENT

a. Has procurement of S&TE for I-Level maintenance of the repairable item been initiated?

YES NO

b. Have calibration procedures for new and unique special purpose and embedded test equipment been developed and provided to IMAs to maintain the equipment?

YES NO

c. Have the support equipment requirements analysis been updated to include IMA requirements since the Demonstration Phase?

YES NO

d. Have the logistic support requirements for the S&TE equipment been identified?

YES NO

5. PACKAGE, HANDLING, STORAGE AND PACKING

a. Have any special packing and packaging requirements for moving equipment between ship and the IMA been identified?

YES NO

b. Have reusable special shipping container requirements for end items and components been included in procurement data?

YES NO

c. Does the equipment require reentry into the supply system or further depot level action before return to the ship?

NO

REQUIRES SUPPLY SYSTEM REENTRY

FURTHER DEPOT LEVEL ACTION REQUIRED

6. TECHNICAL DATA

a. Have I-Level technical data been reviewed and proved adequate?

YES NO

b. Has action been taken to correct any noted technical data deficiencies based on the adequacy review for I-Level maintenance?

YES NO

8. TRAINING AND TRAINING SUPPORT

a. Has the Training Analysis been updated to include I-Level maintenance?

YES NO

b. Will any new or special training be required for I-Level personnel, and, if so, are all arrangements made (e.g., Training Plan, course syllabus, lesson plans, training aids, instructor training, selection of training activities)?

NEW AND OR SPECIAL TRAINING REQUIRED

ALL ARRANGEMENTS MADE

9. FACILITIES. Will new IPE be needed that will require new or modified IMA facilities? If so, has all necessary arrangements been made to ensure they will be operational prior to introduction of the new I-Level maintenance capability?

NEW OR MODIFIED IPE REQUIRED

ALL NECESSARY ARRANGEMENTS MADE