MANAGEMENT OF EXPEDITIONARY EQUIPMENT

NAVFAC P-480

29 JUNE 2016

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

For optimal viewing of this publication, the page layout in Adobe Acrobat Reader should be single page. Continuous page display can cause problems with link references and bookmarks.

Access to a softcopy of this publication in portable document format (.pdf) is available using the following website:

http://www.navfac.navy.mil/products_and_services/ex/about_us/expeditionary_documents.html

FOREWORD

The Commander, Naval Facilities Engineering Command (NAVFAC), has prepared this publication. The policies and procedures set forth herein implement the requirements of several instructions and regulations, and are effective upon receipt unless otherwise indicated. These policies and procedures are applicable to the management of expeditionary equipment for which NAVFAC has been assigned authority and accountability per SECNAVINST 5400.15 (series) (DoN Research and Development, Acquisition, Associated Life-Cycle Management, and Logistics Responsibilities and Accountability) and OPNAVINST 4460.1B (Management of Material Handling Equipment and Shipboard Mobile Support Equipment in Navy). Per SECNAVINST 5400.15, NAVFAC has cognizance of expeditionary systems and materiel including Civil Engineering Support Equipment (CESE), Logistics Over-the-Shore (LOTS), tent camp and tools; and expeditionary and construction training systems and equipment. The other areas of cognizance assigned to NAVFAC in SECNAVINST 5400.15 are not addressed in this publication. Per OPNAVINST 4460.1B, NAVFAC is responsible for implementing procedures for administration, accountability, and management of expeditionary material handling equipment (MHE) (deployable and garrison assets used by the operating force) and shore MHE acquired and used solely by NAVFAC activities in support of internal base public works requirements. The management of garrison expeditionary MHE and shore MHE is not addressed in this publication.

The NAVFAC Expeditionary Programs Office (NEPO) is providing this publication to assist all levels of management, including those in the field, discharge their responsibilities in the efficient utilization of assigned expeditionary equipment. One focus of this publication is to ensure positive control of all materiel under NAVFAC cognizance. Thus, general and detailed procedures for the administration, procurement, registration, assignment, loan, utilization and disposition of expeditionary equipment are covered. Procedures and references are also included for repair versus replace criteria, maintenance planning, scheduling, configuration control, material support, expeditionary equipment modification, painting, identification and markings.

This is an initial issue publication with contents extracted and updated from various sources and developed largely from the NAVFAC P-300 (Management of Civil Engineering Support Equipment). This publication is certified as an official publication of NAVFAC, and has been reviewed and approved by NAVFAC. Errors, omissions, discrepancies and suggestions for improvement of this publication may be forwarded to:

Naval Facilities Engineering Command
1322 Patterson Avenue, SE, Suite 1000
Washington Navy Yard DC 20374-5065

JOHN W. CARSON
Captain, CEC, U.S. Navy

CHANGE RECORD

This page is provided for recording of future changes to this publication.

Change No.	Date	Title or Brief Description	Entered By

TABLE OF CONTENTS

Foreword ii
Change Record iii
Table of Contents iv
List of Figures vii
List of Tables vii
Chapter 1. General Information 1-1
1.1 Purpose 1-1
1.2 Scope 1-1
1.3 Authority and Responsibilities 1-1
1.4 Overview 1-2
1.5 Important Definitions 1-2
1.6 Points of Contact 1-5
1.6.1 NEPO 1-5
1.6.2 EXWC 1-5
Chapter 2. CESE and ExMHE Management 2-1
2.1 Overview 2-1
2.2 Management Requirements 2-1
2.3 Administration 2-2
2.4 Operations 2-2
2.5 Maintenance 2-3
2.6 Support 2-3
2.7 Disposition 2-3
Chapter 3. Capabilities Requirements Management 3-1
3.1 Requirements Process Overview 3-1
3.2 JCIDS Documentation 3-1
3.3 Urgent/Emergent Requirements Process 3-2
3.4 Deliberate Requirements Process 3-2
3.5 Tables of Allowance (TOA) 3-3
Chapter 4. Planning, Programming, Budgeting and Execution (PPBE) 4-1
4.1 Buy Plan Process 4-1
4.2 Program Objective Memorandum (POM) Process 4-2
4.3 Execution 4-3
4.4 Reporting 4-4
Chapter 5. Acquisition 5-1
5.1 Acquisition Planning 5-1
5.2 Acquisition Approach 5-2
5.3 ACAT Designation 5-2
5.4 Systems Engineering 5-6
5.4.1 Process 5-6
5.4.2 Technical Authority 5-7
5.5 Acquisition Logistics 5-8
5.5.1 Technical Data 5-8
5.5.2 Supply Support 5-8

5.5.3 Maintenance Planning and Management 5-9
5.5.4 Support Equipment 5-9
5.5.5 Training and Training Support 5-9
5.6 Contracting 5-10
5.6.1 Pre-Solicitation Documentation 5-10
5.6.2 Market Research 5-10
5.6.3 Independent Government Cost Estimate (IGCE) 5-11
5.6.4 Statement of Work (SOW) 5-12
5.6.5 Performance Work Statements 5-12
5.6.6 Purchase Order 5-13
5.6.7 Pre-Award 5-13
5.6.8 COR Assignment 5-13
5.6.9 Contract Award 5-14
5.6.10 Post-Award 5-14
5.6.11 Monitoring the Contractor 5-15
5.6.12 Contract Acceptance 5-15
5.6.13 EXWC Receipt 5-16
5.6.14 USN/Hull Registration 5-17
5.6.15 License Plates 5-18
5.7 Material Fielding Process 5-18
5.8 Assignment for Use 5-19
5.9 Warranty 5-20

Chapter 6. Sustainment 6-1
6.1 Receipt of Equipment 6-1
6.2 In-Service Engineering Support 6-2
6.2.1 Configuration Management 6-3
6.2.2 Reliability, Maintainability and Availability (RM&A) 6-3
6.3 Sustainment Logistics 6-3
6.3.1 Configuration Management 6-3
6.3.2 Supply Support 6-4
6.3.3 Packaging, Handling, Storage and Transportation (PHS&T) 6-4
6.3.4 Technical Data 6-4
6.3.5 Support and Test Equipment 6-4
6.3.6 Training and Training Support 6-4
6.3.7 Maintenance Planning and Management 6-5
6.3.8 Modernization/Modification of Expeditionary Equipment 6-7
6.3.9 CDMD-OA Data Flow 6-7
6.3.10 Corrosion Control 6-7
6.3.11 Service Life, Repair and Replacement Determinations for Expeditionary Equipment 6-8
6.3.12 Service Life Extension Program (SLEP) 6-9
6.4 Operations 6-10
6.4.1 Expeditionary Equipment and Equipment Operator Testing and Licensing 6-10
6.4.2 Transfers of Expeditionary Equipment 6-10
6.4.3 Lease of CESE 6-13

6.5 Materiel and Equipment Storage 6-13
6.6 Disposition of Expeditionary Equipment 6-14

Chapter 7. Accountability 7-1
7.1 Expeditionary Management Information Systems (EXMIS) 7-1
7.2 Financial Improvement and Audit Readiness (FIAR) 7-1
7.3 Existence and Completeness 7-4

Appendix A: Acronyms and Abbreviations A-1
Appendix B: Definitions B-1
Appendix C: References C-1
Appendix D: Attachment Management for Navy Expeditionary Equipment D-1
Appendix E: Life Expectancy and Cost Repair Limits E-1
Appendix F: Painting and Marking of Expeditionary Equipment F-1

LIST OF FIGURES

Figure 1-1. Three Critical Interacting Processes 1-2

Figure 1-2. NAVFAC Expeditionary Systems and Material 1-4

Figure 4-1. Buy Plan Development Plan of Actions and Milestones (POA&M) 4-1

Figure 4-2. The Annual Buy Plan Process 4-3

Figure 5-1. Sample ACAT/AAP Designation Request 5-4

Figure 5-2. Sample BFM Checklist for AAPs 5-5

Figure 5-3. The Systems Engineering Process 5-6

Figure 6-1. CDMD-OA Data Flow 6-7

Figure 6-2. Request for Disposition of Expeditionary Equipment (TYCOM) (example) 6-17

Figure 6-3. Request for Disposition of Expeditionary Equipment (SYSCOM) (example) 6-18

Figure 7-1. DoD Strategic Management Plan Relationship to Financial Management 7-2

Figure D-1. NAVFAC Form 6-11200/45 D-2

Figure D-2. Attachments Status Board D-3

Figure E-1. Life Expectancy Flowchart for Equipment Users E-3

Figure E-2. Life Expectancy Flowchart for NEPO PMs E-6

Figure E-3. Life Expectancy Adjustment E-7

LIST OF TABLES

Table E-1. Usage Rate Considerations E-2

Table E-2. NEPO PM Contact Information E-4

Table E-3. OTRL Computation Factors for Non-Tactical Vehicles E-11

Table E-4. OTRL Computation Factors for Other Expeditionary Equipment E-12

Table E-5. Table of Service Life E-14

Table E-6. Operating Conditions Selection Guide E-17

Chapter 1. GENERAL INFORMATION

1.1 Purpose

This publication describes duties and responsibilities for both NAVFAC and the end users of expeditionary equipment under NAVFAC's cognizance, and implements directives issued by the Secretary of the Navy, Chief of Naval Operations and NAVFAC.

As derived from SECNAVINST 5400.15 (series), NAVFAC's duties and responsibilities include research and development, acquisition, associated life-cycle management, and logistics, as well as in-service support and serving as the technical authority and operational safety and assurance certification authorities for assigned areas of responsibility. These duties and responsibilities are managed by the NAVFAC Expeditionary Programs Office (NEPO) with the support of the NAVFAC Engineering and Expeditionary Warfare Center (EXWC), and are executed in accordance with several tenets:

- Ensuring high-quality, affordable, supportable and effective defense systems are delivered to the Fleet as quickly as possible by interpreting and applying Department of Defense (DoD) 5000 (series) (The Defense Acquisition System) policy and guidance and balancing the many factors influencing cost, schedule and performance.

- Ensuring positive control of expeditionary equipment in support of DoD Financial Improvement and Audit Readiness (FIAR) goals for improved asset visibility.

- Ensuring expeditionary equipment is properly maintained by adopting the practices documented in Office of The Chief of Naval Operations (OPNAV) Instruction 4700.7 (series) (Maintenance Policy for United States Navy Ships).

This publication provides authoritative information for expeditionary equipment management and supports mission readiness by clarifying roles and responsibilities regarding inventory management, logistics and maintenance.

1.2 Scope

This publication applies to all Navy expeditionary forces materiel under NAVFAC's acquisition areas of cognizance. The areas relevant to this publication include: 1) expeditionary systems and materiel including Civil Engineering Support Equipment (CESE), Logistics Over-the-Shore (LOTS), deployable Expeditionary Material Handling Equipment (ExMHE), tent camp and tools; and 2) expeditionary training systems and equipment.

1.3 Authority and Responsibilities

NAVFAC authority and responsibilities are derived from SECNAVINST 5400.15 (series), which defines the Naval Systems Command (SYSCOM) responsibilities for research and development, acquisition, associated life-cycle management, and logistics; and OPNAVINST 4460.1B, which issues policy and assigns responsibility for management of Navy material handling equipment (MHE). Additionally, NAVFAC is assigned the responsibility of development, modification and management of a unit's Table of Allowance (TOA) and Advanced Base Functional Component

(ABFC) in accordance with OPNAVINST 4040.39 (series) (Navy Expeditionary Table of Allowance and Advanced Base Functional Component Policy).

1.4 Overview

The effective management of expeditionary equipment is dependent on the successful execution of three key DoD processes:

- Joint Capabilities Integration and Development System (JCIDS) for capability requirements and non-materiel solutions,
- Defense Acquisition System (DAS) for materiel solutions and
- Planning, Programming, Budgeting and Execution (PPBE) for resources.

These three key processes must work in concert as shown in Figure 1-1 to ensure consistent decision making while delivering timely and cost effective capability solutions to the warfighters. Together, the three processes provide a means to determine, validate and prioritize capability requirements and associated capability gaps and risks, and then fund, develop and field non-materiel and materiel capability solutions for the warfighter in a timely manner.

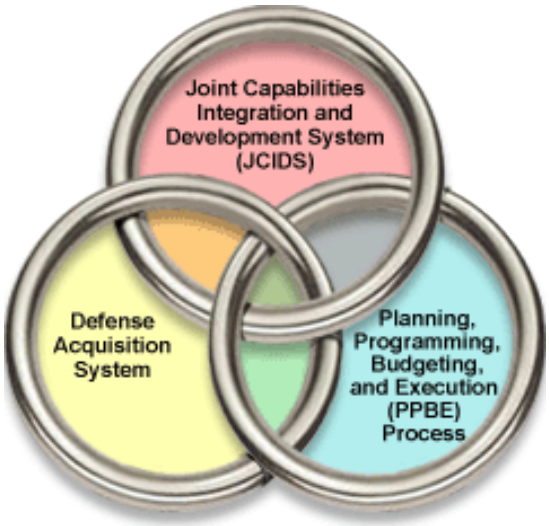

Figure 1-1. Three Critical Interacting Processes

This publication addresses each of these key processes, with JCIDS addressed in Chapter 3, PPBE addressed in Chapter 4 and DAS addressed in Chapter 5. The sustainment of expeditionary equipment delivered as a result of these processes is addressed in Chapter 6.

1.5 Important Definitions

To facilitate a better understanding of this publication, a few key terms are defined in this section. Additional definitions are contained in Appendix B.

Assigned for Use: All NAVFAC life-cycle managed expeditionary equipment is "assigned for use" to the end item user commands who have custody of the equipment. The custodian of the equipment is responsible for positive control of the equipment as well as administration, operation, manning, safety, security, repair and maintenance of the equipment. The custodian is also responsible for developing and submitting budgets needed to fund their efforts and for the establishment of maintenance policies within current policy and guidelines. NAVFAC is **accountable** for the equipment. End users have **custody** of the equipment.

Civil Engineering Support Equipment (CESE): General purpose equipment including automotive vehicles, construction, weight handling, railway, and associated types of equipment, afloat and ashore.

- Automotive vehicles include trailers and all self-propelled motor vehicles designed for highway or cross-country operations. Specifically included are buses, sedans, trucks, carryalls, station wagons, and firefighting trucks (structural, brush, and aircraft crash, fire and rescue).
- Construction and Weight Handling Equipment include mobile or transportable mechanical equipment used in the construction, alteration, and maintenance of buildings, roads or other real property. Included are mobile power shovels, mobile cranes, road rollers, crawler tractors, earthmoving scrapers, snowplows, compressors, generators, street and runway sweepers, and industrial tractors.
- Railway Equipment includes all Navy-owned locomotives, rail car movers, rail cars, and rail maintenance equipment.

CESE is centrally managed by NAVFAC in accordance with OPNAVINST 11240.8 (series) (Management of Civil Engineering Support Equipment in the Navy). For the purpose of the publication, only CESE authorized in a TOA is considered expeditionary equipment.

Expeditionary Facilities: Deployable, self-contained capability for hygiene (laundry, shower and latrine), berthing, food service, medical and dental, operations centers, maintenance and warehousing for the expeditionary forces. Enables operations and force sustainment at austere locations where no infrastructure exists. May also augment existing locations.

Sealift Support Systems: Sealift support systems provide the capability for a continuous and sustained flow of personnel, materiel and liquids from strategic sealift and commercial vessels to expeditionary forces ashore.

2B Cognizance (COG): 2B COG is synonymous with MHE (see COG and MHE definitions in Appendix B). In accordance with OPNAVINST 4460.1B, NAVSUP is responsible for non-expeditionary MHE and NAVFAC is responsible for ExMHE. ExMHE includes MHE used to equip and sustain expeditionary forces to execute combat, combat support, and combat service support missions. ExMHE belongs to expeditionary activities that are either forward-deployed units or whose mission is in direct support of those units. For the purpose of the publication, only ExMHE authorized in a TOA is considered expeditionary equipment.

2C COG: Major construction and civil engineering equipment for which NAVFAC is the inventory manager and maintains technical responsibility. This material is carried in the

Appropriation Purchase Account and consists of equipment, components and supporting items in a research and development stage; or for which budget and procurement requirements, quality control or assignment to use require continuing logistics, engineering, or fiscal administration and control at the Department of the Navy (DoN) level.

Examples of expeditionary 2C COG include:

a. Stake trucks, special purpose vehicles and tactical vehicles such as the Medium Tactical Vehicle Replacement (MTVR).

b. Construction equipment such as mobile cranes, graders, scrapers, dozers and rock crushing plants.

c. Power and water generating equipment such as generators and water purification units.

d. Sealift support systems such as the Improved Navy Lighterage Systems (INLS).

Figure 1-2 shows the relationship between NAVFAC-managed 2C COG items and the other expeditionary materiel which NAVFAC controls. Life-cycle responsibilities for equipment and material inside the 2B and 2C COG circles include initial procurement, recapitalization and capability sustainment. For all equipment and material outside the 2B and 2C COG circles, NAVFAC is responsible for planning and budgeting for initial outfitting and Integrated Product Support (IPS).

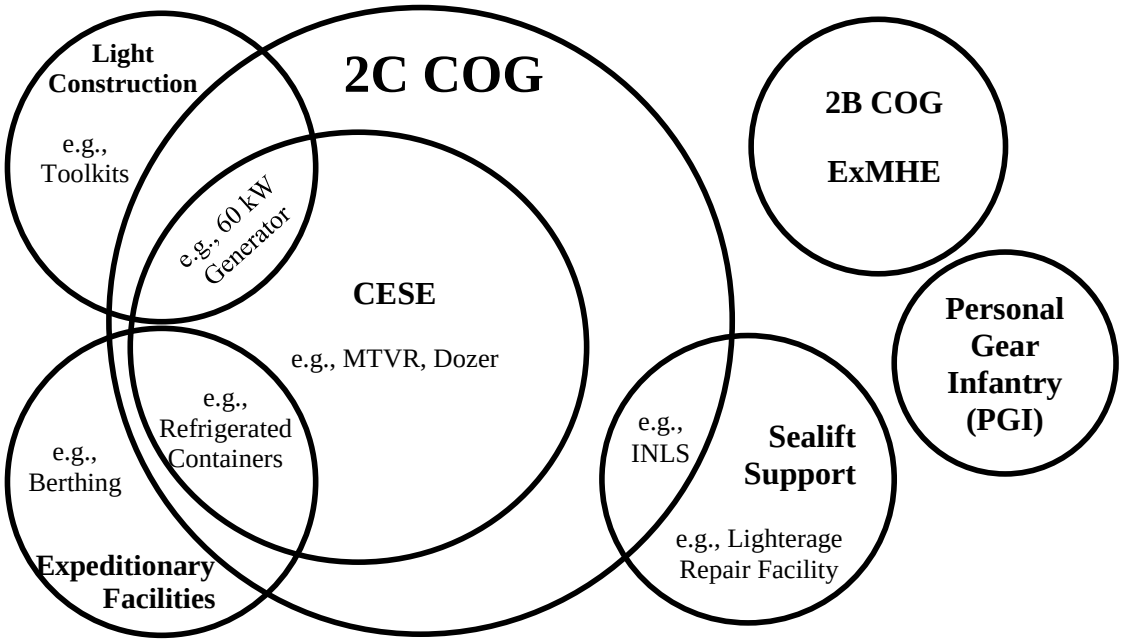

Figure 1-2. NAVFAC Expeditionary Systems and Material

1.6 Points of Contact

1.6.1 NEPO

a. Director, (202) 685-6002, NAVFAC_HQ_NEPO_EXBL@NAVY.MIL

b. Product Group Director, (202) 433-5166. Oversight of Program Managers (PM) for Sealift Support, Motor Transport, Heavy Construction, Light Construction, Expeditionary Facilities, and Personal Gear Infantry.

c. Table of Allowance Requirements Division, (202) 433-2515

d. Assistant PM (APM) for Logistics, (202) 685-6032

e. APM for Systems Engineering, (202) 685-6016

1.6.2 EXWC

a. Deputy Operations for Expeditionary, (805) 982-5271. Oversight of Program Leads (PL) for Sealift Support, Motor Transport, Heavy Construction, Light Construction, and Expeditionary Facilities.

b. Expeditionary Department Head, (805) 982-1779

(1) Deputy / Construction Equipment Department lead, (805) 982-1986

(2) Logistics Director, (805) 982-1883

(a) Principal End Item Manager (PEIM) Supervisor, (805) 982-4559

(b) Equipment transfers/inventory: EXWC_General_Equipment@navy.mil

(3) Engineering Director, (805) 982-1288

Chapter 2. CESE AND EXMHE MANAGEMENT

2.1 Overview

OPNAVINST 11240.8H assigns Commander, Naval Facilities Engineering Command (COMNAVFACENGCOM) principal responsibility as the Navy single manager for CESE. NAVFAC is responsible for establishing policies and procedures for the management of CESE to include determining requirements, programming and budgeting for acquisition, utilization, and maintenance and operation.

OPNAVINST 4460.1B assigns COMNAVFACENGCOM responsibility for implementing procedures for administration, accountability, and management of ExMHE and shore MHE acquired and used solely by COMNAVFACENGCOM activities in support of internal base public works requirements.

CESE and ExMHE fulfilling a shore requirement are managed by NAVFAC's Base Support Vehicles and Equipment (BSVE) program in accordance with NAVFAC P-300. BSVE provides commercial acquisition, United States Navy (USN) assignment and registration, and License Plate Program management for Other Procurement Navy (OPN) and Navy Working Capital Fund (NWCF) activities worldwide. BSVE provides "cradle to grave" asset management and procurement and ensures all reporting requirements are provided for validation of inventory and fiscal accountability. Procurements range from small vehicles/equipment all the way through to locomotives.

CESE and ExMHE fulfilling an expeditionary TOA requirement are managed by NEPO with the support of EXWC in accordance with this publication, which also identifies, defines, and describes the duties and responsibilities of a command with custody of expeditionary equipment. This chapter provides a high level overview of the management process and briefly highlights aspects discussed in more detail in other chapters of this publication.

2.2 Management Requirements

The following actions are expected to be accomplished for expeditionary equipment NAVFAC provides to the using unit commands. Further direction is provided in the ensuing paragraphs and applicable references are contained in parentheses.

- be properly receipted, documented, and reported in the Accountable Property System of Record (APSR)
- be consistently tracked in a physical inventory management system
- be utilized only in the manner for with it is intended
- only be operated by properly licensed, trained, and/or certified personnel
- be maintained in accordance with OPNAV directed Maintenance and Material Management (3-M) procedures or equivalent
- have any and all preventative and corrective maintenance actions performed as needed and as required per Maintenance Index Pages (MIP) and Maintenance Requirement Cards (MRC) and applicable technical manuals
- be rotated in use so as to level equipment usage rates across the enterprise

- be maintained in the same configuration as issued, unless NAVFAC issues authorization and instructions for changes to occur
- be maintained and accounted for by the unit it is assigned to until NAVFAC issues disposition instructions

Using units shall create local policy and procedures, where appropriate and where higher instruction is not already in place, in order to achieve the above requirements.

2.3 Administration

Using units will maintain positive accountability for all assigned equipment. Units shall:

- receipt for equipment (paragraph 6.1)
- document all equipment transfers (paragraph 6.4.2)
- document all temporary loans of equipment (paragraph 6.4.2)
- document all equipment dispositions (paragraph 6.6)

Discrepancies noted upon receipt will be documented and processed in accordance with SECNAVINST 4855.3 (Product Data Reporting and Evaluation Program).

Using units will ensure equipment configuration is maintained to the established specifications (paragraph 6.3.1).

Using units shall provide updates on equipment transfers for recording in EXMIS (paragraph 6.4.2).

Using units shall prepare casualty reports (CASREP) in accordance with NWP 1-03.1 (Operational Reports), enter updates into Configuration Data Managers Database – Open Architecture (CDMD-OA) in accordance with NAVSEA TECH SPEC 9090-700D (Ships Configuration and Logistics Information Support Information System (SCLSIS)), and perform all other supply actions in accordance with NAVSUP P-485 (Naval Supply Procedures).

2.4 Operations

Expeditionary equipment shall be used only in a manner for which it is intended, and only by properly qualified and authorized personnel. Operators of expeditionary equipment shall be properly licensed (paragraph 6.4.1).

Expeditionary equipment shall be transported in compliance with the instructions provided with the equipment (paragraph 6.3.3).

Expeditionary equipment shall be utilized on a rotational basis to the maximum extent practicable to ensure similar pieces of equipment realize the same general usage (paragraph 6.4.2e(2)(a)).

Expeditionary equipment shall be stored properly to provide safety, security, protection, and preservation of the equipment (paragraph 6.5).

Any safety issues or mishaps will be documented and processed in accordance with OPNAVINST 5102.1D (Navy & Marine Corps Mishap and Safety Investigation, Reporting, and Record Keeping Manual).

Expeditionary equipment that transports hazardous material shall do so in accordance with Part 397 (Transportation of Hazardous Materials; Driving and Parking Rules) of Title 49 (Transportation) of the Code of Federal Regulations (CFR).

2.5 Maintenance

All using units shall follow the approved 3-M procedures, or other approved maintenance procedures, for all expeditionary equipment maintenance (paragraph 6.3.7).

- Preventative maintenance shall be performed on the expeditionary equipment per the established MIPs and MRCs (paragraph 6.3.7) and relevant technical and maintenance manuals
- Corrective Maintenance shall be performed on the expeditionary equipment only to the level authorized in the provided technical manuals (paragraph 6.3.7)
- Only maintenance at the approved levels of the custodial unit shall be performed on the assigned expeditionary equipment (paragraph 6.3.7)
- Outside repair activities are available for maintenance above the custodial unit level, as identified in the Expeditionary Combat Enterprise (NECE) Expeditionary Maintenance Plan for Navy Expeditionary Combat Command (NECC) Forces

Corrosion control and prevention is critical for all expeditionary equipment due to the nature of the environments where it is typically used and stored (paragraph 6.3.10).

2.6 Support

For expeditionary equipment identified as product support worthy, NAVFAC will ensure:

- technical support and documentation is established and provided (paragraph 5.5.1)
- proper provisioning and accompanying Allowance Parts Lists (APL) and Allowance Equipage Lists (AEL) are in place (paragraph 5.5.2)
- the documentation to effect maintenance, e.g., MIPs and MRCs, are in place (paragraph 5.5.3)
- identification of any special tools and support and test equipment needed for equipment operation or maintenance (paragraph 5.5.4)
- training documentation is established and provided to the receiving unit (paragraph 5.5.5)

For any issues not covered by this or the supporting documents, users can contact Navy 311 via their website at http://www.navy311.navy.mil/ or seek additional assistance via EXWC.

2.7 Disposition

Disposition of equipment includes any permanent transfer between units, relinquishing of custody back to NAVFAC, or disposal of the equipment. The EXWC PEIM will authorize and instruct the using unit for all equipment dispositions. The using unit and/or group commander or

equivalent shall not dispose of or in any way relinquish positive control of assigned equipment without disposition instructions from the PEIM. Units can request disposition instructions from the PEIM through their Chain of Command via their TYCOM (paragraph 6.6).

Chapter 3. CAPABILITIES REQUIREMENTS MANAGEMENT

3.1 Requirements Process Overview

The JCIDS process, which is documented in the Chairman of the Joint Chiefs of Staff Instruction 3170.01 (Joint Capabilities Integration and Development System), provides the means to determine, validate and prioritize capability requirements and associated capability gaps and risks. Though a variety of approaches may be used to determine capability requirements, the fundamental goal of each approach is to derive and refine capability requirements—either organically or leveraged through the Joint force—necessary to accomplish the warfighter's assigned functions, roles, missions and operations. Primary outputs include:

- Description of the mission and military problem being assessed.
- Identification and assessment of prior capabilities based assessments (CBAs), studies, and other analytical products applicable to the area of interest.
- Identification of the tasks to be completed to meet the mission objectives.
- Identification of the capability requirements within one or more of the joint capability areas, described in terms of the tasks, performance and conditions.
- Assessment of capability gaps between the identified capability requirements and current or programmed force capabilities.
- Assessment of operational risks associated with each capability gap if not addressed.
- Evaluation of possible non-materiel and materiel approaches to satisfy part or all of the capability requirements and close or mitigate the associated capability gaps.
- Recommendation for the most appropriate approach to be taken to close or mitigate capability gaps and reduce operational risk.

Each approach for identifying capability requirements should not presuppose a specific capability solution or end item, but provide data related to forms and functions of potential solutions to support the development of JCIDS documents. The final recommendations should include a focused and concise summary of the justification for the proposed action.

Due to the wide array of issues that may be considered, the breadth and depth of each approach must be tailored to suit the issue. The approach must be sufficient to develop coherent and well-supported recommendations, which the validation authority will then use to validate the capability requirements and associated capability gaps to support possible follow-on actions.

3.2 JCIDS Documentation

JCIDS documents serve as a means to submit capability requirements and capability gaps, along with other relevant information, for review and validation. The five categories of JCIDS documents are:

- Initial Capabilities Document (ICD)
- Doctrine, Organization, Training, Materiel, Leadership Policy and Education, Personnel, Facilities, and Policy (DOTmLPF-P) Change Recommendation
- Capability Development Document (CDD)
- Capability Production Document (CPD)
- Urgent Operational Need (UON)

Enclosure B of the JCIDS Manual provides detailed guidance on the purpose and format for each of these documents.

What is key to note for the purpose of this publication is the CDD and CPD must contain the Key Performance Parameters (KPPs), Key System Attributes (KSAs) and additional performance attributes necessary for the acquisition community to design and propose systems and to establish programmatic baselines.

3.3 Urgent/Emergent Requirements Process

The Urgent/Emergent staffing processes within JCIDS allow validation of capability requirements related to either ongoing (Urgent) or anticipated (Emergent) contingency operations, which if not satisfied in an expedited manner, would result in unacceptable loss of life or critical mission failure.

The Navy's urgent needs process is documented in a Joint Memorandum from the Assistant Secretary of the Navy (Research, Development and Acquisition) and the Deputy Chief of Naval Operations (Integration of Capabilities and Resources), specifically ASN(RD&A) and CNO (N8) memorandum 4000 Ser N8/7U162072 of 19 Jul 07. Navy UONs are submitted via the operational chain of command through the applicable Navy Component Commander to United States Fleet Forces Command (USFFC). Any UON that cannot be resolved by USFFC is forwarded to the Navy Urgent Needs Gatekeeper at OPNAV. The Gatekeeper screens urgent needs requests for compliance with applicable instructions and policy and assigns a resource sponsor to act as a Rapid Action Team Lead. The Team provides further definition of the UON, identifies potential materiel solutions, develops a cost estimate, recommends a rapid acquisition path, identifies funding for proposed solutions, and either a) prepares a Rapid Deployment Capability request memorandum to provide rapid acquisition of Commercial Off-the-Shelf (COTS) or Non-Development Items (NDI), or b) initiates the Rapid Development and Deployment process for rapid development, integration and testing of new prototype solutions.

3.4 Deliberate Requirements Process

Absent an urgent/emergent operational need, capability gaps are reviewed through a deliberate staffing process, which is covered in detail in Enclosure D of the JCIDS Manual. The typical tailoring of this process for expeditionary equipment provides the following simplified path for capability identification, assessment and approval:

- Type Commander (TYCOM) drafts a JCIDS document, typically either a CDD or CPD, to submit a capability gap to OPNAV via USFFC.

- USFFC carefully reviews the JCIDS document to validate the capability gap. If validated and USFFC cannot identify a solution within their control, USFFC endorses the JCIDS document and forwards to OPNAV for consideration.

- OPNAV Resource Sponsor assesses the JCIDS document and conducts an abbreviated DOTMLPF-P review and as appropriate an Analysis of Alternatives (AoA). If the sponsor validates the capability gap, determines a materiel solution is required and is not willing to accept the risk caused by the capability gap, a program would be initiated in one of two ways as discussed in paragraph 1.1.1.2 of SECNAVINST 5000.2E (Department of the Navy Implementation and Operation of the Defense Acquisition System and the Joint Capabilities Integration and Development System):

    - Sponsor formally documents the operational need for materiel solutions meeting Acquisition Category (ACAT) thresholds as defined in paragraphs 1.4.1 through 1.4.5 of SECNAVINST 5000.2E, or

    - Sponsor tasks the appropriate SYSCOM via a Program/Resource Sponsor Requirements Memorandum for materiel solutions meeting the Abbreviated Acquisition Program (AAP) threshold as defined in paragraph 1.4.6 of SECNAVINST 5000.2E.

3.5 Tables of Allowance (TOA)

Enduring capabilities are documented in a TOA, which is the list of systems, equipment and material authorized for an expeditionary unit to conduct its assigned mission. The TOA serves as the basis for programming the future force, provides guidance for initial outfitting and recapitalization of the force, establishes a baseline for reporting readiness, and provides item metadata to support DoD financial reporting.

Capabilities addressed through the urgent/emergent requirements process are generally not an enduring requirement and are not documented in a TOA without specific guidance from the Resource Sponsor. Capabilities addressed through the deliberate requirements process, even if previously initiated as an urgent/emergent need, are documented in the TOA.

Policy and guidance for the development, modification and management of TOAs is documented in OPNAVINST 4040.39 and NAVFACINST 4423.1 (Navy Expeditionary TOA Development and Revision Policy and Processes).

A comprehensive and up-to-date list of TOAs and the systems, equipment and material contained within a TOA can be accessed at https://abfcview.navfac.navy.mil.

FIAR Notice

When an expeditionary equipment requirement is added to the TOA, it is important to populate the item's metadata as this data is used in DoD's financial statements. Critical information includes but is not limited to the Stock Number (e.g., National Stock Number (NSN)), Item Description, Unit Cost and Useful Life.

Chapter 4. PLANNING, PROGRAMMING, BUDGETING AND EXECUTION (PPBE)

The PPBE process is how DoD "allocates its resources." It is how DoD manages to stay within its fiscal budget while following the Secretary of Defense's policy, strategy and goals. For expeditionary equipment, the PPBE process is informed by the buy plan process, which serves to balance initial outfitting and recapitalization requirements against TYCOM priorities and fiscal controls.

4.1 Buy Plan Process

The buy plan is a summary procurement plan over the Future Years Defense Program (FYDP) and is specific to each Force, Program Element (PE) and funding Line Item (LI). The buy plan is focused strictly on SYSCOM procurements to fulfill initial outfitting requirements, recapitalize centrally-managed equipment, and Phased Replacement and Technical Refresh of TOA assets. Figure 4-1 depicts a typical annual buy plan development schedule.

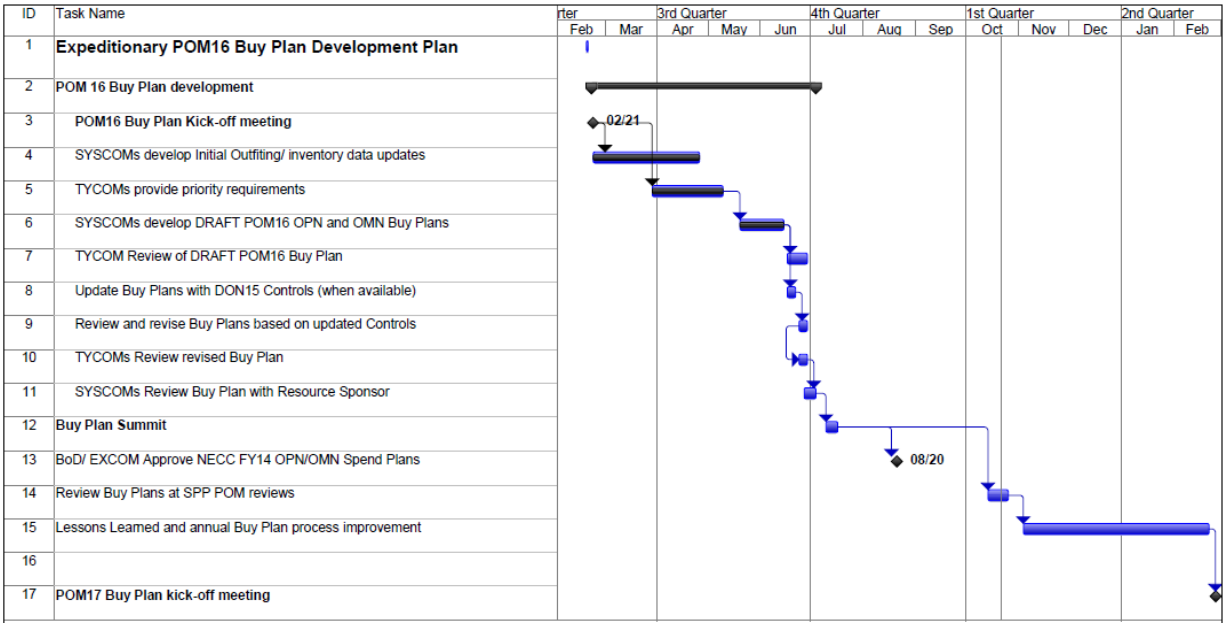

Figure 4-1. Buy Plan Development Plan of Actions and Milestones (POA&M)

The process, which is documented in the Business Management System located on NAVFAC's intranet, entails:

- TYCOMs providing priority requirements.
- SYSCOMs developing draft buy plans by analyzing:
  - what is authorized in the TOA,
  - inventory status (e.g., on hand, due in and expected losses due to age, items not supportable, etc.),
  - fiscal controls,
  - acquisition constraints and
  - TYCOM priorities.

- SYSCOMs conducting reviews of the draft buy plans with the TYCOMs and OPNAV to achieve consensus.

- NEPO facilitating a consolidated Buy Plan Summit to formally present the multi-year buy plan for approval by the O-6 leadership of the OPNAV Resource Sponsors, TYCOMs and SYSCOMs. Buy Plan should have minimal change on the budget year and budget year +1 and focus on planning for the POM years.

Once approved, the buy plans are used to plan procurements for the budget year (BY) and BY+1. In certain cases these execution year plans are subject to senior leadership approval, e.g., the Navy Expeditionary Combat Enterprise (NECE) Executive Committee (EXCOM) approves NECE plans.

While the buy plan process is largely an exercise for the SYSCOMs to plan procurements "to stay within their fiscal budget," the process provides valuable data and analysis to support Program Objective Memorandum (POM) development.

4.2 Program Objective Memorandum (POM) Process

The POM seeks to construct a balanced set of programs that respond to the guidance and priorities of the Defense Planning and Programming Guidance within fiscal constraints. When completed, the POM provides a fairly detailed and comprehensive description of the proposed programs, including a time-phased allocation of resources (forces, funding and manpower) by program projected five years into the future. In addition, the DoD Component may have the opportunity to describe important programs not fully funded (or not funded at all) in the POM, and assess the risks associated with the shortfalls.

OPNAV Resource Sponsors (RS) annually develop the Sponsor Program Proposal (SPP) which is an output of the RS POM analysis of inputs from the SYSCOMs (Buy Plan) and TYCOMs (priorities) balanced against funding constraints. If the output of the Buy Plan does not align to the current FYDP profile by LI, but is within bottom line funding controls, then OPNAV is required to complete funding alignments via the Technical Adjustments as part of the POM cycle.

The SPP provides the resource requirements to the DoN requirements, the OSD submission and eventually the input as part of the Presidential Budget submission to Congress. Figure 4-2, depicts the annual cycle of the funding appropriation and the sequential Buy Plan development. This cycle permits an annual review of the DoD appropriation, the TYCOM TOA requirements and the SYSCOM plans.

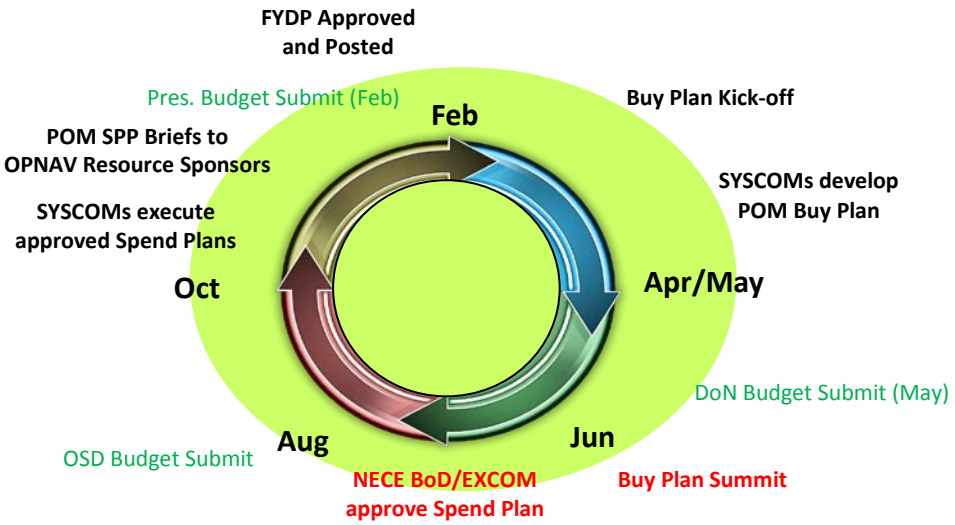

Figure 4-2. The Annual Buy Plan Process

4.3 Execution

The Buy Plan is built to DoN Financial Controls while execution in the FY is based on the DoD appropriation bill. If there is a delta between the two, the SYSCOM has some capability for reprogramming within the Budget Submitting Office (BSO) (NAVFAC is BSO25). BSOs are authorized a total of 20% reprogramming into/out of any one LI for the three year appropriation. This reprogramming authority also allows for adjustment in execution due to favorable and unfavorable awards.

Execution performance is measured by Office of the Assistant Secretary of the Navy (Financial Management and Comptroller) and is based on the SYSCOMs' achievements of benchmarks at midyear and end of year. Achievement of benchmarks is critical to maintain the FYDP resources the OPNAV Resource Sponsors have provided. OPN benchmarks are:

Year of availability	End of March	End of year
First year	40%	80%
Second year	85%	90%
Third year	95%	100%

In order to facilitate execution, phasing plans are developed for the approved spend plan and cash is distributed by NEPO to the execution partners based on the phased plan. The execution partner is determined by the Primary SYSCOM field in EXMIS.

4.4 Reporting

Financial reporting is key to communicate execution performance, requirements during POM, valuation/accountability supporting DoD FIAR initiatives, and management decisions of the Expeditionary Enterprise.

FIAR reporting requirements are extensive and detailed, and include but are not limited to Quarterly valuation of General Equipment and Quarterly accountability of Operating Materials and Supplies. Both are reported to FMO, OPNAV and SECNAV.

Other execution reports which allow for good business and financial management include spend plan execution report, weekly financial execution reports, and month end Budget Control Number (BCN) reports.

Chapter 5. ACQUISITION

The systems acquisition process is initiated when a capability has been defined and approved by OPNAV (Chapter 3) and resourced (Chapter 4).

NAVFAC adheres to Navy and DoD Acquisition Policies. In instances where this publication conflicts with DoN and DoD policies and instructions, DoN and DoD policy and instructions take precedence.

5.1 Acquisition Planning

The PM has overall responsibility for acquisition planning per Defense Federal Acquisition Regulation Supplement (DFARS) subpart 207.103 (g). The PM is responsible for convening acquisition planning meetings with representatives from logistics, technical, fiscal, security, contracting, legal counsel, small business, and other areas, as appropriate, to prepare initial Acquisition Plans (APs) or revise APs. The PM is responsible for coordinating the plan with all those who have a responsibility for the development, management, or administration of the acquisition.

Acquisition planning is the process where the efforts of all personnel responsible for the acquisition are coordinated and integrated through a comprehensive plan for fulfilling the TYCOM requirement in a timely manner and at a reasonable cost. Acquisition planning begins as soon as the need is identified, preferably well in advance of the fiscal year in which contract award or order placement is necessary. Acquisition planning includes developing the overall strategy for managing the acquisition.

An approved AP represents a formal agreement between the PM, Contracting Officer, and Milestone Decision Authority, or Head of the Contracting Activity (HCA) as to how the PM will execute the program, and serves as the baseline from which cost, schedule and performance will be measured.

Acquisition planning is required by statute (10 USC 2305 (a)(1)(A)(ii)) as implemented through the Federal Acquisition Regulation (FAR 7.102) to promote and provide for (1) the acquisition of commercial items to the maximum extent practicable; and (2) full and open competition or, when full and open competition is not required or possible, maximum competition practicable. Commercial items are supplies or services sold to the general public that require no major modification to meet the government's specific requirements.

Although NEPO retains responsibility for approving requirements and technical specifications, much of the acquisition planning and execution of the plan will be delegated to EXWC once a program is at or beyond full rate production in accordance with the NAVFAC Concept of Operations (CONOPS).

ASN (RD&A) provides an Acquisition Plan Guide (APG) as a living document available at http://www.secnav.navy.mil/rda/Pages/PolicyGuidance.aspx. NAVFAC BMS S17.1.3, "Acquisition Planning Documentation," should be reviewed for process information, templates, and other command considerations.

5.2 Acquisition Approach

Systems acquisition can range from complex, full-scale development to relatively simple procurement of COTS. Individual programs may differ and choose to take an evolutionary approach which delivers a capability in two or more increments. This is the DoD preferred strategy. Additionally, a single step or "big bang" approach to systems acquisition can be taken as a single increment. This approach requires a well-defined understanding of the total program requirement, and all required technology is of sufficient maturity (e.g. a Technology Readiness Level (TRL) of 6 or greater for MS B). In a single step approach, the entire program schedule may be delayed if one technology requires additional maturation, or the program in its entirety is unaffordable. Regardless of the approach taken, well-defined requirements (e.g., KPPs, KSAs and additional performance attributes) are essential to establish programmatic baselines.

PMs will assess the approved requirements against capabilities approved in other force TOAs to determine if an existing materiel solution will meet the requirement. When existing expeditionary TOA materiel solutions do not meet the requirement, other service capability and / or force providers should be reviewed for applicability to the need. Absent an existing TOA or Service solution, market research will be conducted before developing new specifications for procurement and before soliciting bids or proposals for a contract in excess of the simplified acquisition threshold. Intent is to encourage offerors to supply commercial items, or, to the extent that commercial items suitable to meet the user's needs are not available, non-developmental items, in response to a future solicitation. This step is required by 10 U.S. Code § 2377 (Preference for acquisition of commercial items) and is in accordance with the Commercial Item Handbook published by the Office of the Secretary of Defense Acquisition, Technology, and Logistics (Acquisition Initiatives).

As a last recourse, a new materiel solution may be developed to fulfill the approved requirement. This development will be in accordance with the DoD 5000 series, and when appropriate will be designated as either an ACAT program or an AAP as allowed by SECNAVINST 5000.2E for lower dollar thresholds. Accordingly, an Acquisition Program Baseline (APB) or Program Office Estimate (POE) will be completed to establish cost thresholds and requirements.

The PMs must consider life cycle costs, and performance and schedule in making program decisions. Supportability, a key component of performance, will also be considered throughout the system life cycle per DoD Directive 5000.01 (The Defense Acquisition System).

5.3 ACAT Designation

Acquisition categories are assigned by the Milestone Decision Authority (MDA) in accordance with SECNAVINST 5000.2E guidance for ACAT I through IV programs and AAPs.

Commander, Naval Facilities Engineering Command is the ACAT designation authority for all programs assigned to NAVFAC, and can designate ACAT III and IV programs as well as AAPs. This authority can be delegated to the Executive Director (ED), Acquisition Director or the NEPO Director.

The NEPO Product Group Director (PGD) and PM shall review each program relative to the ACAT boundaries. The PM with approval from the PGD shall prepare an ACAT designation

request to the Commander, Naval Facilities Engineering Command or designated MDA via the NEPO Director for programs anticipated to fall within the ACAT or AAP categories. Figure 5-1 provides the format for this request.

If requesting an AAP designation, the PM will obtain a Commander Operational Test and Evaluation Force (COMOPTEVFOR) concurrence letter as well as the Business and Financial Management (BFM) checklist shown in Figure 5-2.

After review of the PM's proposed ACAT designation request with endorsements, Commander, Naval Facilities Engineering Command will issue an Acquisition Decision Memorandum (ADM) which either:

- Approves the request and delegates MDA or Program Decision Authority (PDA).
- Approves the request, and retains MDA or PDA at the NAVFAC HQ level.
- Disapproves the request and directs other actions.
- Disapproves the request and directs no action be taken to execute the program.

The ADM will also provide guidance regarding any program specific documentation requirements and exit criteria.

5000
NEPO/Serial #
Date

MEMORANDUM

From: Program Manager, (program area)
To: Commander, NAVFAC HQ
Via: (1) NEPO Product Group Director
(2) NEPO Director

Subj: ACAT/AAP DESIGNATION REQUEST FOR (Program Name)

Ref: (a) SECNAVINST 5000.2E

Encl: (1) OPNAV Concurrence Letter
(2) Requirements Document, e.g. Statement of Need, Capability Development Document, etc. (provide as a reference if lengthy)

1. Purpose: Request ACAT/AAP concurrence and designation.

2. Acquisition program short and long title.

3. Program description. (Brief description including its mission).

4. Planned cost and funding:

a. Appropriation (APPN):[repeat for each appropriation, PE, LI, Sub]
- Program Element (No./Title):
- Project Number/Line Item (No./Title):
- Sub-project/Line Item (No./Title):
- Dollars: ($000)

APPN		FY	FY	FY	FY	FY	FY	To Complete	Total
	Required								
	Budget								
	Delta								

5. A reference to, or a copy of, the validated requirement for the program. The requirement must be validated by the appropriate requirements organization. For new-start ACAT/AAPs, the requirement may take the form of a Statement of Need or Capability Document such as an ICD, CDD or CPD.

6. Developmental testing planned or conducted on the program.

7. Milestone status. PMs should identify a notional schedule of milestone, key acquisition events and technical reviews. This information will serve as a “notional” program schedule until such time as the program office can formalize the C/S/P metrics identified in an approved APB.

8. Rationale for ACAT/AAP designation request or change.

SIGNATURE

Figure 5-1. Sample ACAT/AAP Designation Request

PART A: To be completed by the Program Manager.

PROPOSED AAP Name: _____

ESTIMATED COST: _____

FUNDING SOURCE: (then year $) (attach a separate sheet if more space is required):

RDT&E:_____

OPN:_____

O&MN:_____

PART B: To be completed by NEPO Business and Financial Management.

1. Does the funding source(s) cited above for the proposed AAP:

a. Contain adequate funds to support the estimated program cost?
(Yes _____ No_____)

b. Represent a proper expenditure of the type of funds cited?
(Yes _____ No_____)

c. Fall within the thresholds established for an AAP?
(Yes _____ No_____)

2. The proposed (AAP) (Modification AAP) was planned for during budget development or has otherwise been determined to be an affordable effort with a sufficient funding priority to warrant execution at this time?
(Yes _____ No_____)

3. FM is aware of no Congressional, OSD or Navy level interest in the proposed AAP.
(Yes _____ No_____)

BFM Signature

Figure 5-2. Sample BFM Checklist for AAPs

5.4 Systems Engineering

5.4.1 Process

Systems Engineering is the process that provides the technical framework for acquiring and maintaining the materiel that most cost effectively fulfills the ICD or even CPD, the capability requirement articulated by the users and approved by OPNAV. It assures that all technical aspects of the acquisition are planned for, addressed during design/acquisition, delivered to the government and maintained in a way that best supports the life cycle support needs devised for the requirement within cost constraints established in the APB.

The recommended approach to acquisition systems engineering is depicted in Figure 5-3, which was sourced from the Defense Acquisition Guidebook. It identifies the technical and management processes that best achieve the compromises required to meet cost, schedule and performance goals of a new acquisition.

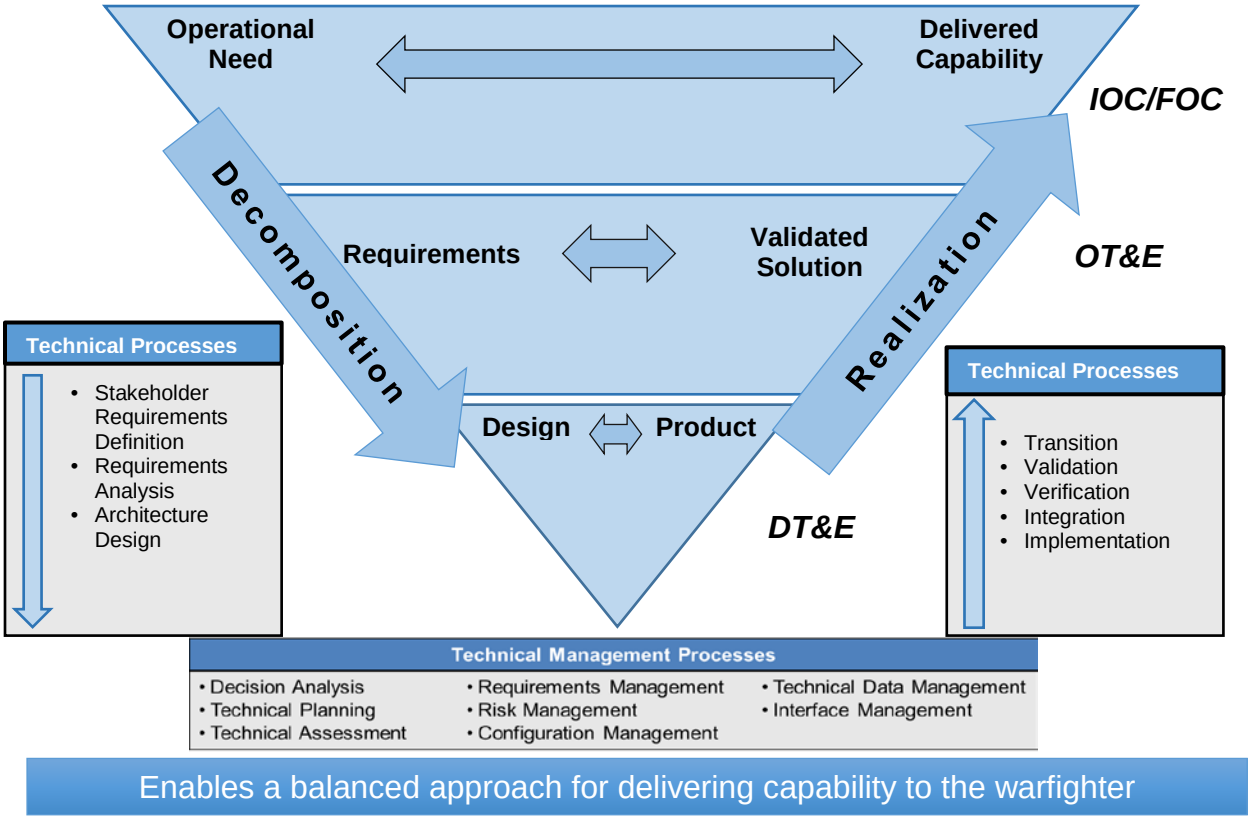

Figure 5-3. The Systems Engineering Process

The assigned system engineer advises the PM on requirements traceability and trade space, system specification requirements to be included in acquisition documents and review of contractor delivered specifications and other technical documentation, system safety analysis, the ability to achieve the PMs maintenance philosophy goals, system configuration management and baseline establishment and developmental and delivery testing requirements. Upon successful

delivery and testing, system engineers provide the Program Office's recommendation for technical approval as the foundation for the Product Group Director's fielding release.

Areas where the NEPO and EXWC Systems Engineers support the PM/PL include, but are not limited to:

- Identifying performance metrics as measured by the KPPs and KSAs,
- Identifying governing technical design standards, be they Military Standards (MILSTDs) for uniquely military capabilities or the DoD-preferred commercial technical standards or consensus standards,
- Systems engineering and development, including Environment, Safety and Occupational Health management,
- Incorporating availability, reliability, supportability and cyber security requirements into initial designs, acquisition strategies, and procurement documents,
- Developing technical testing requirements to guarantee performance in accordance with the KPPs and KSAs,
- Conducting technology development and technical readiness assessments,
- Developing and reviewing technical deliverables required for equipment acceptance and for in-service support of the equipment during the lifecycle,
- Obtaining approval for, and consistently implementing technical requirements changes across weapon and IT systems, and
- Managing the configuration of the weapon or IT system.

5.4.2 Technical Authority

Technical authority is the authority, responsibility, and accountability to establish, monitor, and approve technical standards, tools, and processes in conformance with higher authority policy, requirements, architectures and standards. NEPO, on behalf of COMNAVENGCOM, exercises both programmatic and technical authority for expeditionary equipment. Warranting of qualified individuals as independent technical authorities is addressed in NAVFACINST 5400.10 (Virtual SYSCOM Engineering and Technical Authority Policy). These Technical Warrant Holders (TWH), which may include EXWC when appropriate, are entrusted and empowered to provide leadership and make technically sound engineering decisions within their warranted technical areas, ensure integration with other technical areas, and perform their responsibilities with integrity and discipline.

TWHs advise the PMs on system design and testing criteria, systems' integration issues, refer technical detail issues to the Navy's (or DoD's) cognizant technical experts, regardless where they reside, and resolve issues peculiar to their platforms where no TWH exists. The interaction between programmatic and technical authority is also addressed in NAVFACINST 5400.10.

NAVFAC's warrant holders are responsible to, and refer conflict resolution to, the Chief Engineer of NAVFAC should conflict or risk acceptance criteria dictate.

5.5 Acquisition Logistics

NEPO, with the support of EXWC, will determine the support worthiness of expeditionary equipment and the IPS elements to be procured and/or developed to support the equipment. In general terms, support worthy equipment requires some level of IPS to be properly operated and maintained by the Fleet. As outlined in the NAVFAC Life Cycle Configuration Management Plan (CMP), configuration data will also be established and maintained for expeditionary equipment. The NEPO PMs have the ultimate responsibility and authority for the configuration of all expeditionary equipment managed by NAVFAC. The details concerning policy, procedures and guidance for acquisition logistics support are provided in NAVFACINST 4081.1A (Acquisition Logistics Manual). The following logistics products are typically required for all expeditionary equipment.

5.5.1 Technical Data

Technical data consists of all recorded scientific and technical information regardless of form or characteristics. Technical data includes engineering drawings, operator, maintenance and parts manuals, specifications, inspection test and calibration procedures, and computer program software documentation. Technical data management encompasses the identification, coordination, collation, validation, integration and control of data requirements. This process includes planning for economical acquisition and timely receipt of data, ensuring the data is adequate for its intended use, and managing the data assets after their receipt. Data management includes monitoring the storage, retrieval, and disposal of data.

Expeditionary programs leverage both the Technical Data Management Information System (TDMIS) and the Naval Logistics Library (NLL) for Technical Manual (TM) management and distribution. TDMIS is a TM repository that has the capability to identify, track, and distribute the information required to maintain TMs throughout their life-cycle. NLL is a TM repository that provides electronic access and requisition capability to published technical documentation.

Whether expeditionary equipment is developed specifically for the government or has its origins in the commercial marketplace largely determines the type of technical data that may be available. As such, an assessment of the depth and breadth of technical data to be procured will be made on an end-item by end-item basis.

5.5.2 Supply Support

Supply support consists of all management actions, procedures and techniques used in acquiring, cataloging, receiving, storing, transferring, issuing and disposing of equipment, spares and/or repair parts. The aim for all expeditionary programs is to have adequate organic supply support to achieve system readiness objectives available at the proper echelons of supply and maintenance prior to Initial Operating Capability (IOC). This support, including spare and/or repair parts and publications, is continued throughout the system's life cycle. When organic support cannot be put in place prior to IOC, interim supply support strategies will be employed. There are three primary areas an acquisition supply support program should address:

provisioning, cataloging and replenishment. The provisioning process and the development of provisioning documentation (APLs, AELs, Allowance Component Lists (ACLs)) ensures Fleet visibility of the support posture of all fielded equipment.

5.5.3 Maintenance Planning and Management

Maintenance Planning is the foundation of effective life cycle planning. The PM has the responsibility for establishing the maintenance plan. Maintenance planning is an iterative process to explore alternatives and to establish concepts and plans for maintaining a system throughout its life cycle and provides the basis for development of all other logistics support requirements. This process starts with the development of a maintenance concept which is published in requirements documents in very broad terms. Maintenance planning is performed to ensure: development of the minimum set of maintenance requirements necessary to operate the equipment at its assigned readiness threshold; assignment of maintenance tasks to the appropriate level where they are accomplished most efficiently and effectively; and development of a maintenance concept and detailed maintenance planning, which will provide the information necessary to support logistics planning and management decisions.

A critical task in the maintenance planning process is identifying those preventive maintenance checks and services that maintain equipment at specified readiness goals. Planned Maintenance System (PMS) is a standardized method for planning, scheduling, and accomplishing preventive maintenance by the expeditionary force. All expeditionary acquisitions will use Reliability-Centered Maintenance (RCM) methodologies to develop the PMS requirements for the system. The goal of RCM is to identify the minimum preventive maintenance procedures required to maintain equipment in a fully operable condition within specifications.

5.5.4 Support Equipment

Support equipment is defined as any system or device used to test, measure, evaluate, inspect or otherwise examine materials, supplies, equipment or a system to identify, isolate any actual or potential malfunction, or to determine compliance with specifications established in technical documents. Support equipment provides the type of service that is managed under the NAVSEA Test, Measurement, and Diagnostic Equipment (TMDE) Program, which stipulates specific procedures concerning the acquisition, selection and induction of TMDE. The program also provides a process for calibration and measurement traceability of all systems, subsystems, and equipment parameters, which ensures systems and equipment operational integrity and accuracy. This includes the establishment of traceability from actual system and equipment level measurements to the National Institute of Standards and Technology (NIST). NAVFAC outfits TMDE to units as required for use in both corrective and preventative maintenance.

5.5.5 Training and Training Support

Training and training support encompass the processes, procedures, techniques, training devices and equipment used in training personnel to operate and maintain a system. To facilitate timely, cost effective and appropriate training content, development and planning of training will be performed during the earliest phases of the acquisition processes, outlined within the System Training Plan/Navy Training System Plan (NTSP). This includes initial training to place the

system into service, new equipment and follow-on training. The goal of the training function is to ensure all training resources and programs are provided at the proper time and place to ensure the procured system can be properly operated and maintained.

5.6 Contracting

The expeditionary equipment and IPS should be procured on the same contractual vehicle when possible.

The order of precedence for fulfilling requirements by contract is as follows:

1. Coordinated acquisition where an acquiring department for an end item has been specified in DFARS Part 208, Required Sources of Supplies and Services, e.g., Earth Moving and Excavating Equipment from Defense Logistics Agency (DLA) Troop Support.

2. Designated program offices, e.g., High Mobility Multipurpose Wheeled Vehicle (HMMWV) from the Army's Program Executive Office (PEO) Combat Support and Combat Service Support.

3. Existing contracts from NAVFAC or other Services/PEOs.

4. Existing contracts available from DLA or General Services Administration (GSA).

5. New contract pursued as a joint effort with other Services/PEOs.

6. New contract to be awarded by NAVFAC.

5.6.1 Pre-Solicitation Documentation

In accordance with NAVFAC BMS S-17.1.3, Acquisition Planning Documentation, NEPO/EXWC will assist the Contracting Office, whether internal or external to NAVFAC, with documentation to include obtaining interagency acquisition approval; determining whether requirement for products and services meets the definition of commercial items; determining whether the requirement includes Government Furnished Property (GFP); obtaining approval for award of a task or delivery order contract to a single source; conducting market research; and obtaining justification for other than full and open competition.

5.6.2 Market Research

Acquisitions of supplies and services begin with a description of the Government's needs stated in terms sufficient to allow the acquisition team to conduct market research. This is normally a collective effort between the Program Office, the supported Command, and EXWC's Expeditionary Product Support Maintenance and Expeditionary Systems Engineering Divisions. The results of the market research form the basis for developing new requirement documents and issuing solicitations. Market research is an ongoing process used to collect, organize, maintain, analyze, and present data. Its purpose is to maximize the capabilities, technology, and competitive forces of the marketplace to meet an organization's needs for supplies and services.

The research will vary, depending on such factors as urgency, estimated dollar value, complexity, and past experience. This research involves obtaining information specific to the item being acquired and determining whether the Government's needs can be met by items that are customarily available in the commercial marketplace, by items that are customarily available in the commercial marketplace but need modifying, or by items used exclusively for governmental purposes. Results should be documented in a manner appropriate to the size and complexity of the acquisition. Market research is also critical for realistic and reasonable cost estimating.

Through market research, the requesting activity recommends to their procurement office the strategy that makes the most sense in terms of the mission and the market, in order to obtain the maximum number of responsible offerors.

Market research includes locating vendors in the industry by publishing formal requests for information in appropriate technical or scientific journals or business publications, searching professional journals, Internet, and word-of-mouth. Further guidance on market research is provided in FAR Part 10.

5.6.3 Independent Government Cost Estimate (IGCE)

The IGCE is the Government's estimate of the resources and projected cost of the resources a contractor will incur in the performance of a contract. These costs include direct costs such as labor, products, equipment, travel, and transportation; indirect costs such as labor overhead, material overhead, and general and administrative expenses; and profit or fee (amount above costs incurred to remunerate the contractor for the risks involved in undertaking the contract).

The IGCE is used to establish a realistic price/cost for budget purposes. Depending on the type of product or service being procured, the IGCE is developed by the PM, systems engineer and/or product support staff within NEPO and/or EXWC. In addition, the Contracting Officer uses the IGCE for technical and management information. The IGCE is the baseline for evaluating an offeror's contract price/cost. The format and contents of the IGCE vary with the complexity and value of the requirement.

Acquisition statutes require analysis of price/cost to determine either a reasonable price in the event of a fixed-priced contract or a realistic cost resulting from award of a cost-reimbursement contract. The results of any contract action in terms of quality and reasonableness of price/cost rely heavily on the accuracy and reliability of the IGCE.

Any significant variation between an offeror's proposal and the IGCE requires analysis. When variations exist, the Government can identify and correct inaccuracies in the IGCE or use the IGCE to negotiate a more realistic price.

When buying a commercial item with stable specifications, the estimator should research past price history and adjust for any changes in specifications, quantities, or inflation factors. For items that do not have a detailed pricing history, a detailed analysis of individual cost elements will be necessary. The IGCE should include a brief narrative describing how the costs were developed and what reference materials were used.

5.6.4 Statement of Work (SOW)

The SOW should specify in clear, understandable terms the work to be done in developing or producing the goods to be delivered or services to be performed by a contractor. All Statements of Work shall include a description of work to be performed; location of work; period of performance; deliverable schedule; applicable performance standards; and any special requirements (e.g., security clearances, travel, and special knowledge). Preparation of an effective SOW requires both an understanding of the goods or services that are needed to satisfy a particular requirement and an ability to define what is required in specific, performance-based, quantitative terms. A SOW prepared in explicit terms will enable offerors to clearly understand the government's needs. This facilitates the preparation of responsive proposals and delivery of the required goods or services. A well written SOW also aids the Government in the conduct of the source selection and contract administration after award.

5.6.5 Performance Work Statements

Performance work statements (PWS) is a SOW for performance-based acquisitions that describes the required results in clear, specific and objective terms with measurable outcomes. Typically, a PWS covers the following topics:

- Introduction
- Background information
- Scope
- Applicable documents
- Performance requirements
- Special requirements or constraints (such as security)

Best practices and lessons learned for developing a PWS include the following:

- The requirement should not be so specific that all offerors propose the same solution, eliminating creativity and innovation.
- A performance-based acquisition requires that the integrated solutions team abandon some traditional approaches to buying services.

The PWS should state requirements in general terms of what (result) is to be done, rather than how (method) it is done. The PWS gives the contractor maximum flexibility to devise the best method to accomplish the required result. The PWS must be written to ensure that all offerors compete equally. The U.S. Government must remove any features that could restrict a potential offeror. However, the PWS must also be descriptive and specific enough to protect the interests of the U.S. Government and to promote competition. The clarity and explicitness of the requirements in the PWS will invariably enhance the quality of the proposals submitted. A

definitive PWS is likely to produce definitive proposals, thus reducing the time needed for proposal evaluation.

5.6.6 Purchase Order

To release funds to the procuring contracting office for the purchase of expeditionary equipment, a purchase order must be generated in the Expeditionary Management Information System (EXMIS), which is NAVFAC's business system to support the expeditionary enterprise. Additional information on EXMIS is provided in paragraph 7.1.

FIAR Notice

When a purchase order is generated, the following fields shall be populated in EXMIS: Acquisition Date (planned), Acquisition Cost (planned) and Posting Reference (contract number, purchase order number, etc.).

5.6.7 Pre-Award

If executed internal to NAVFAC, pre-award actions will be performed in accordance with NAVFAC BMS S-17.2. If external, NEPO/EXWC will provide technical assistance to the Contracting Officer, as required; support nomination and appointment of the Contracting Officer's Representative (COR) for post-award duties; and prepare to receive materiel.

5.6.8 COR Assignment

A COR must be assigned to each acquisition unless all of the following conditions are met in accordance with NAVFACINST 4200.1 (Contracting Officer's Representative).

- The contract will be awarded using simplified acquisition procedures;
- The Contracting Officer (KO) documents, in writing, why the appointment of a COR is unnecessary

The requiring activity manager or COR supervisor will select a COR and must verify that individual has received the required training and has relevant technical expertise. The COR must self-nominate using the Contracting Officer's Representative Tracking (CORT) Tool via Wide Area Workflow (WAWF). The nomination must be approved by the COR supervisor and the KO in CORT Tool. Once the nomination is approved in the CORT Tool the KO will issue an appointment letter to be signed by both the COR and KO.

Within EXWC, the COR is traditionally assigned to either the PEIM in the Expeditionary Product Support Maintenance Division or the Engineer Technician in the Expeditionary Systems Engineering Division who developed the SOW/PWS.

5.6.9 Contract Award

NEPO/EXWC supports the Contracting Officer in executing NAVFAC contract awards in accordance with BMS S-17.3, Award, which includes providing contract funding and assisting with contractor responsibility determination, as required. Similar support is provided to other Contracting Agencies in accordance with their processes and procedures.

All NEPO/EXWC contracts shall include DFARS Clause 252.211-7003, Item Unique Identification (IUID) and Valuation, in solicitations and contracts that require item identification and/or valuation. IUID and valuation is a system of marking, valuing, and tracking items delivered that enhances logistics, contracting, and financial business transactions. Through IUID policy, NEPO will achieve lower life-cycle cost of item management and improve life-cycle property management; improve operational readiness; provide reliable accountability of property and asset visibility throughout the life cycle; reduce the burden on the workforce through increased productivity and efficiency; and ensure item level traceability throughout lifecycle to strengthen supply chain integrity.

FIAR Notice

When the contract is awarded and/or order placed, EXMIS must be updated to reflect the actual Acquisition Date and Acquisition Cost. The Posting Reference must also be uploaded as an attachment on the Purchase Order. This information provides easy access to Key Supporting Documentation for reference when verifying contract and cost data associated with a reportable asset.

.

5.6.10 Post-Award

Post-award responsibilities include:

- Informing the respective receiving units of an awarded contract for approved items.
- Providing the receiving units a copy of the contract/delivery order.
- Providing Receiving Units with Estimate Date of Delivery.
- Monitoring progress of contract through communication with the manufacturer; tracking estimated delivery date.
- Communicating and coordinating the final scheduled delivery date with the manufacturers and receiving units.

For EXWC-managed procurements, the Procurement Management Branch is responsible for the above activities with the support of the PEIMs. For NEPO-managed procurements, the PMs are responsible for the above activities.

If executed internal to NAVFAC, NEPO/EXWC will also assist with development of the Quality Assurance Surveillance Plan (QASP), as required; ensure the contractor's compliance with the terms and conditions of the contract; will monitor contractor performance; and will support the Contracting Officer with issuing modifications, processing payments, resolving disputes, and contract close-out in accordance with BMS S-17.4, Post Award. Similar support will be provided to other Contracting Agencies, as required.

Communication should be established in the beginning of the contract to achieve a mutual understanding of contract requirements and specific responsibilities between the Government and the Contractor with a clear knowledge of the roles and responsibilities of Government officials.

5.6.11 Monitoring the Contractor

To properly monitor the contractor, the COR must know and understand the requirements of the contract, as specified in the SOW/PWS in Section C of the contract. The COR should have a copy of the SOW/PWS readily available to ensure the contractor is verifying and enforcing contract requirements as stated in the SOW/PWS. Interpreting the contract requirements can be difficult if the SOW/PWS is poorly written, displaying a lack of technical knowledge, inadequate planning or research, lack of communication, differing interpretations, and carelessness. With the proper SOW/PWS and performance-based metrics, contract performance is more likely to be successful.

The COR must notify the Contracting Officer in a timely manner, orally and in writing, if the contractor is not performing well, i.e., if contractor performance deviates from the SOW/PWS. It is the responsibility of the Contracting Officer to give verbal or written directions to the contractor. These directions should be made a part of the record in the official contract file. The requiring activity should not attempt to interpret the SOW/PWS for the contractor and may not direct changes or accept substitute performance. Many people have improperly cost the Government, or themselves, money by making seemingly nonchalant remarks asking the contractor to act outside the scope of the contract.

5.6.12 Contract Acceptance

Acceptance is the responsibility of the Contracting Officer but this responsibility may be delegated to the COR. Acceptance can take place before, at the time of, or after delivery; however, supplies or services ordinarily should not be accepted before completion of Government contract quality assurance actions.

Before services or supplies furnished by the contractor can be accepted, the COR must determine acceptability by review or inspection. The COR shall ensure the requisite subject matter expertise, e.g., logistics and systems engineering, is leveraged to review all contract deliverables to advise the COR and PM/PL of its acceptability to the Government.

Final acceptance by the Contracting Officer of supplies received or services rendered concludes performance by the contractor, except for administrative details relating to contract closeout. After final acceptance, the contractor can no longer be held responsible for unsatisfactory effort unless otherwise specified in the contract. Therefore, the COR must ensure that the work

performed under the contract is measured against the contract terms and quality requirements. If performance does not meet contract quality requirements, it is incumbent upon the COR to identify deficiencies and to advise the Contracting Officer. Acceptance is evidenced by execution of an acceptance certificate on an inspection or receiving report form or on a commercial shipping document/packing list.

Exceptions to final acceptance include:

- latent defects,
- fraud, and
- gross mistakes amounting to fraud

A latent defect is one that is not readily noticeable upon reasonable inspection at the time of acceptance. The burden is on the Government to prove that defective material and workmanship was the probable cause of product failure. Latent defects can also apply to design and manufacture contracts; in those cases, the contractor may have to replace the designed product at no charge to the Government.

FIAR Notice

Effectively documenting end item receipt is critical!

- Acceptance documentation must be signed by an authorized receiver.
- Signed acceptance documentation must be saved in EXMIS as an attachment to the asset record.
- The Individual Item Identifier (USN), Year of Manufacture, Location, and Secondary Unique Identifier (IUID) must be updated in EXMIS.

5.6.13 EXWC Receipt

When the equipment is delivered to either Port Hueneme or Gulfport, the receiving manager for CED shall email the PEIM/PL within 72 Hours. CED shall ensure receipt of all equipment listed in the DD250, perform a limited technical inspection, and sign the document and fax to the PEIM/PL/KO.

When discrepancies or deficiencies occur, EXWC shall document them with sufficient information to enable initiation and processing of claims against vendors and/or carriers. NAVSEALOGCEN's Product Data Reporting and Evaluation Program (PDREP) website (https://www.pdrep.csd.disa.mil/) provides the following forms and guidance for reporting equipment discrepancies or deficiencies.

- Material Inspection Report,
- Product Quality Deficiency Report (PQDR) and

- Supply Discrepancy Report (SDR).

If the item received is to be kitted or packed, instructions will be provided and coordinated by EXWC. EXWC shall inform the receiving command that the equipment was procured, the date the equipment will be shipped and when the command will receive the equipment.

The EXWC Procurement Management Branch is responsible for:

- Obtaining proof of receipt documents such as Bill of Ladings or DD250 to include in EXMIS.
- Ensuring compliance with PDREP requirements.
- Informing the PEIMs of the final receipt through copy of Proof of Receipts.
- Informing Life Cycle Management Branch of receipt to afford opportunity to validate logistics products against the configuration received.
- Notifying Receiving Units of upcoming deliveries.

5.6.14 USN/Hull Registration

To establish permanent and positive identification, expeditionary equipment is marked with registration numbers by the Original Equipment Manufacturer (OEM) or EXWC for COTS acquisitions when the OEM is unable to mark the equipment. EXWC will then register the equipment and corresponding registration numbers in EXMIS. EXWC has the responsibility for assigning USN registration numbers and hull registration numbers (by exception as described in paragraph "b" below) (herein abbreviated as "USN/Hull registration numbers" when referring to both land-based and waterborne equipment, respectively). EXWC also maintains current and complete files and records for all registered Navy expeditionary equipment ashore and afloat.

FIAR Notice

The USN/Hull registration number is the primary Individual Item Identifier for expeditionary equipment.

Please note intermodal containers issued through NAVFAC or procured by units are not assigned USNs; however, they are controlled assets and registered in the Army Container Asset Management System (ACAMS). The U.S. Army's Military Surface Deployment and Distribution Command is responsible for the assignment of DoD container registration numbers for all DoD. The Army assigns the numbers to contracted container vendors and vendors are responsible for marking the containers before delivery to the government. Every Unit who possesses containers must designate a container control officer (CCO) and maintain ACAMS as their container management system.

a. Classification by Registration Number. The USN/Hull registration number assigned to each unit of expeditionary equipment is keyed to classify the unit by the pertinent category as shown within Figure 2-3 of NAVFAC P-300 and in accordance with paragraph 2.10.1.and 2.10.1.b of the NAVFAC P-300. The EXMIS Item Master Registration Series identifies the appropriate items of expeditionary equipment requiring USN/Hull registration. Upon receipt, USN/Hull registration numbers are recorded in the EXMIS Assets Tab, registration numbers can also be found by querying this tab. The following is registration guidance for specific classes of expeditionary equipment.

b. Boat hull registration numbers, assigned to Sealift Support principal end items, follow the NAVSEA convention for assigning registry numbers in accordance with NSTM S9086-TX-STM-010, Chapter 583, Volume 1, Revision 5. The standard convention is: two digit boat length in feet (or two digit boat length in meters followed by the letter M), followed by letters identifying the boat type, followed by two digit year of contract award, and followed by the boat number in sequence of completion. For example, 88WT1003 is the third 88-foot warping tug procured under a 2010 contract.

5.6.15 License Plates

U.S. Government license plates are not issued for expeditionary equipment in accordance with exemptions granted in CFR Title 41 (Public Contracts and Property Management). The requirement to display license plates on government vehicles is stated in §102-34 (Motor Vehicle Management); however, expeditionary equipment is specifically excluded from coverage under this part of the CFR per §102-34.20. The specific exclusion is for "military design motor vehicles; motor vehicles used for military field training, combat, or tactical purposes; and motor vehicles used principally within the confines of a regularly established military post, camp, or depot."

5.7 Material Fielding Process

Material Fielding serves as the initial notification to the gaining command of the intent to field the new equipment. It outlines the processes to be followed, responsibilities, points of contact, and other general information. The Material Fielding process outlines system characteristics (particularly new or unique), schedule, responsibilities, and administrative instructions, to include initial and sustained training requirements. It forms the basis for the gaining, supporting, and fielding commands to make detailed plans for the fielding process to include such items as manpower required, location and accountability.

All new equipment not previously fielded into the TOAs and below the ACAT thresholds, must have the Product Group Director's approval to field and operate. The decision to field and operate new capabilities will depend on the following being completed:

a. The purpose of the materiel fielding process is to ensure only safe, operational, and supportable products are fielded, the NEPO PM will coordinate with the TYCOM a "formal" material fielding decision through a Materiel Release.

b. NEPO PMs may employ a Materiel Fielding IPT to assist in the fielding and deployment of the system. NEPO will determine the need for a Materiel Fielding IPT and plan for funding for the facilities, equipment, tools and materiel needed for the task.

c. There are four different categories of material release.

(1) Full release is a formal certification that the materiel is safe, suitable when used within its stated operational parameters.

(2) A conditional material release results when not all of the requirements are met. The shortfalls will be detailed by the PM and provided to the receiving command for acceptance of the risk. The PM will provide and plan to have the materiel achieve full release with a timeline prior to requesting to field and operate.

(3) An urgent need release is intended solely to meet an operational need of a deployed or imminently deploying unit in support of approved contingencies.

(4) Training material release, when the materiel will be delivered to the training schools and commands only to be used for development of training curricula.

5.8 Assignment for Use

All NAVFAC centrally-managed expeditionary equipment is "assigned for use" to the user commands who have custody of the equipment. The custodian of the equipment is responsible for the administration, operation, manning, safety, security, development and submission of the budgets needed to perform maintenance, stock repair parts, and for the establishment of maintenance policies within current policy and guidelines. End users have custody of, and are responsible for maintaining this equipment.

Prior to the fielding of expeditionary equipment, EXWC will:

- Add Configuration Overhaul Planning (COP) data to CDMD-OA to notify the unit of the incoming major end item (applicable only to Commands utilizing 3-M)

- Update EXMIS with Custodial / User Organization and Operational Status

FIAR Notice

When an asset is assigned for use, it is critical to establish a linkage with CDMD-OA. Doing so greatly reduces the burden for subsequent inventories as each corrective maintenance action on an asset resets the 3-year clock for a required inventory of that asset.

COP data should be loaded into CDMD-OA for configuration management purposes. The command should acknowledge receipt via OPNAV 4790/CK (Ship's Configuration Change Form).

5.9 Warranty

Methods of applying warranties are covered in Federal Acquisition Regulation (FAR) clauses, and the DoD and SECNAV instructions. NAVFAC typically applies warranty FAR clauses on all contracts. NAVFAC warranties will generally be of two types: a performance assurance warranty in which the primary intent is to assure minimum design, quality, and performance levels stated in the contract are achieved; or a failure-free warranty requiring a period of failure-free usage. The performance assurance warranty is preferred in most cases although failure-free warranties may be appropriate in acquisitions where an item's reliability is unknown or unspecified (particularly in the case of COTS and NDI).

All warranty information for product must be included in the maintenance planning process and documented in EXMIS. Warranty information is also provided to the Fleet in the ULSS.

Chapter 6. SUSTAINMENT

6.1 Receipt of Equipment

Field units receiving equipment shall send an email within 72 hours to the respective equipment office. The e-mail shall contain the date the equipment was received on site. The receiving unit will report in the 3-M system, via the OPNAV 4790/CK submittal process, the receipt of equipment. The receiving unit shall perform an initial inspection and inventory of all equipment, parts and materials received. This inspection is used to determine the condition of the expeditionary equipment. It consists of complete functional testing of the equipment and all components using applicable operator and technical equipment manuals. The requirement for complete functional testing does not extend to equipment or components on which it is obviously impractical to perform such tests. A rock crushing plant is an example of such equipment. A fuel servicing semi-trailer/vehicle, on the other hand, would require complete functional testing. If the vehicle has special tools, attachments or auxiliary equipment delivered with the vehicle, the inspection shall include an accounting of those tools, attachments and auxiliary equipment. The unit shall sign the DD Form 1342, DoD Property Record, and submit it to the PEIM responsible for the equipment. The PEIM shall report any discrepancies to the Program Office.

Upon completion of Registration, the EXWC Procurement Branch shall complete the procurement action by:

- Verifying the receipt completion (RECEIPT Block)
- Update EXMIS STATUS Block (from EXECUTED to COMPLETED)

FIAR Notice

It is important that a DD1342 is signed and filled out by the receiving officer who has been designated in writing as such. Once the signed DD1342 form is received by EXWC, the information is used to populate the required fields in EXMIS that state the item was received by which command. DD 1342 should include at a minimum the following information for FIAR:

FIAR Required Data Element	**Field Name from Asset Table**	**DD1342**
Individual Item Identifier	AssetNum (USN)	Block 3. ID/ Government Tag NO.
Category/Asset Type	ItemNum	Block 5. Stock Number
Item Description	Description	Block 26. Description and Capacity
Reporting Organization	This is always NAVFAC for 2C COG and is not in the system	This is always NAVFAC for 2C COG and is not in the system
Custodial Organization	Record Holder	Block 29 Processor Code???
Acquisition Date	Year Manufactured	Block 8. YR of MFG
Secondary Unique ID	EMIUII	Added to the description field

6.2 <u>In-Service Engineering Support</u>

In-Service Support Agent (ISEA) responsibilities include but are not limited to the following:

- Development of PMS documentation to include validation of newly developed or changed procedures.
- Maintenance of PMS documentation.
- Timely responses to Technical Feedback Reports (TFBR).
- Providing copies of critical TFBR resolutions to all holders of the affected MIP/MRC.

- Maintenance, retention and support of technical data, a consideration even more critical given COTS equipment typically does not require detailed fabrication drawings as they can be supported with OEM TMs (operation, maintenance and repair), spare parts and a worldwide distribution network.

The PM will designate the ISEA for the equipment delivered and/or components thereof, in order to maintain Subject Matter Expertise for all field users. While EXWC is the ISEA for most of NEPO's equipment, others may be tasked when appropriate, e.g., Naval Surface Warfare Center (NSWC), Carderock Division - Ship Systems Engineering Station Philadelphia (CD-SSES) is the ISEA for components of INLS.

The NEPO APM for Systems Engineering provides oversight over the In-Service Engineering Agent's services.

6.2.1 Configuration Management

In NEPO's oversight role, the APM for Systems Engineering provides technical authority and representation on the PM's Configuration Control Board (CCB) in accordance with the NAVFAC CMP. Change requests are approved for ISEA investigation and Alteration/Engineering Change Proposal approval for fielding at the PM's request.

6.2.2 Reliability, Maintainability and Availability (RM&A)

Current DoD policy requires that all systems maximize reliability, maintainability and availability (RM&A), to ensure optimal operational effectiveness in austere locations. Further, early investments in RM&A minimize the life cycle cost of military systems by reducing spare part inventory requirements, repair time and labor costs and downtown awaiting spare part delivery. All ICDs and CPDs shall have a target Operational Availability requirements (a KPP or KSA) that are derived from operational requirements. During acquisition RM&A will be maximized through design using a structured RCM methodology. Post delivery, RM&A is reviewed by the ISEA periodically through the systems life cycle via Open Architectural Retrieval System (OARS) data populated from 3-M reporting. High maintenance issues and failure prone parts can be identified and corrected to increase RM&A with this analysis. Therefore, it is imperative that field units utilize 3-M and report accurate maintenance data for NEPO/ISEA analysis and trending.

6.3 Sustainment Logistics

The details concerning policy, procedures and guidance for sustainment logistics support are provided in NAVFACINST 4081.1A. The User Logistics Support Summary (ULSS) is required for all delivered support worthy systems and will identify the details of the delivered logistics IPS package. The ULSS will also identify the Navy support mechanisms for the life-cycle sustainment of these logistics support products.

6.3.1 Configuration Management

The responsibilities for the life-cycle management of configuration data for expeditionary systems and equipment are outlined in the NAVFAC CMP.

**** Changes/Modifications or Alterations to expeditionary equipment without the prior approval of the governing CCB in accordance with the aforementioned CMP or explicit approval from the NEPO PM are NOT AUTHORIZED ****

6.3.2 Supply Support

New equipment must be supported by repair parts, special tools, test equipment, and support equipment. As part of the provisioning process, EXWC creates or updates APLs and AELs. APLs and AELs list all maintenance significant parts to enable logistics and technical personnel to identify and obtain the repair parts and other material required to repair and maintain their equipment.

6.3.3 Packaging, Handling, Storage and Transportation (PHS&T)

The intent of PHS&T is to ensure equipment reaches the Fleet while minimizing the risk of damage during handling, storage, and transportation – often in highly challenging and corrosive operational environments. Navy expeditionary equipment PHS&T details are covered in paragraph 5.3.9 of enclosure (1) of NAVFACINST 4081.1A. One unique requirement not specifically covered in this publication is as follows:

Expeditionary equipment requiring airlift must be accompanied by an Internal Air Transport Certification from the Air Transportability Test Loading Agency (ATTLA). NEPO PMs, supported by Systems Engineering, are responsible for securing this requirement through the Air Force. ATTLA can be contacted by e-mail at ATTLA@us.af.mil for a copy of the certification form and additional information.

6.3.4 Technical Data

EXWC is the Technical Manual Maintenance Activity for expeditionary equipment with the exception of certain Sealift Support equipment where responsibilities are shared with Naval Surface Warfare Center (NSWC), Carderock Division - Ship Systems Engineering Station Philadelphia (CD-SSES).

6.3.5 Support and Test Equipment

The tools, test and support equipment required for maintenance are identified within each TOA. As expeditionary equipment changes and/or is updated, the test equipment and any tools and specialized support equipment also need to be updated.

6.3.6 Training and Training Support

The NAVFAC SYSCOM roles for Naval training systems requirements, acquisitions and management are defined by OPNAVINST 1500.76C, dated 14 Aug 2013. Training support encompasses a strategy to identify and validate equipment requirements and resources to include billets, funding, personnel, facilities, hardware, course materials, and services necessary to conduct training. No one command has complete authority in the determination of training and training support. It is the organized efforts of operational units and TYCOMs to view holistically and within the guidelines set forth by DoN that will thread Manpower, Personnel and Training

(MPT) requirements into a supportable, cost effective training solution. The NTSP documents MPT requirements. New equipment training and follow-on training for new/modernized equipment, regardless of acquisition type, should be funded as part of the equipment's acquisition.

6.3.7 Maintenance Planning and Management

Custodial commands, including NAVFAC, shall ensure expeditionary equipment is properly maintained.

Units that have not fully adopted 3-M, e.g., Naval Expeditionary Medical Command and Naval Special Warfare Command (NSWC), shall maintain the expeditionary equipment following the procedures outlined in the associated operators manuals and technical publications.

Units that have adopted 3-M, e.g., NECC units and the Naval Beach Groups, shall follow approved 3-M instructions and procedures as directed by OPNAVINST 4700.7 (series) (Maintenance Policy for United States Navy Ships), OPNAVINST 4790.4 (series) (Ship's Maintenance and Material Management System Policy) and COMFLTFORCOMINST 4790.3 (series) (Joint Fleet Maintenance Manual). Additional information on 3-M follows.

PMS was developed to provide commands and activities with the tools to plan, schedule, and control preventive maintenance effectively. Maintenance procedures are developed in accordance with RCM principles for planned maintenance and represent the minimum required preventive maintenance to maintain equipment within specifications.

a. Equipment specific maintenance actions and procedures are listed on two key documents:

(1) Maintenance Index Page (MIP). MIPs are developed for each system/equipment for which PMS support has been established. MIPs are basic PMS reference documents. Each is an index representing a complete set of MRCs applicable to a system, subsystem or equipment.

(2) Maintenance Requirement Card (MRC). MRCs provide detailed procedures for performing maintenance requirements and describes who, what, how and with what resources a specific maintenance requirement shall be accomplished.

b. The three basic levels of Navy maintenance depend largely on the complexity of the maintenance task and whether or not it is being accomplished by unit personnel.

(1) Organizational level (O-level) maintenance is the lowest maintenance level and consists of all maintenance actions within the capability of the unit. O-level maintenance is the first defense against allowing small defects to become major operational and material problems. Within resource limitations, units should strive to improve self-sufficiency and self-assessment capabilities. Self-assessment involves recognizing, identifying, and reporting equipment/systems' evident failure modes or symptoms of operation below standards or out-of-specification during zone inspection, PMS execution, or watch standing. Typical organizational-level maintenance actions include, but are not limited to, such items as:

(a) Facilities maintenance, such as cleaning and proper preservation.

(b) Routine systems and component planned maintenance, such as inspections, systems operability tests and diagnostics, lubrications, calibration, and cleaning.

(c) Corrective maintenance, such as hull, mechanical & electrical and electronic troubleshooting down to the lowest replaceable unit level, miniature/microminiature electronic repair, component change-out, and, in some cases, complete disassembly and repair in-place, in order to restore components to operation. Generate OPNAV 4790/2K (Ship's Maintenance Action Form) with completed corrective maintenance actions and forward to the Work Center Supervisor within the Maintenance Data System.

(d) Assistance to higher level maintenance activities.

(e) Verification and quality assurance of maintenance accomplished by other activities.

(f) Ensuring documentation of all deferred and completed maintenance actions, whether accomplished by ship's force or by other activities.

(2) Intermediate level (I-Level) maintenance requires skills, facilities, or capacities normally beyond those of the organizational level but does not necessarily require depot-level skills, facilities, or capacities. I-level maintenance is performed by fleet maintenance activities such as the Construction Equipment Departments, Regional Maintenance Centers (RMCs), NAVFAC-coordinated activities, or private companies as determined by the Fleet commander. Authorized work includes, but is not limited to the following:

(a) Preventive maintenance.

(b) Corrective maintenance.

(c) Tests and inspections.

(d) Installation of alterations.

(e) Work on electronic circuit boards, components, modules, subassemblies, and other equipment coded for intermediate-level repair.

(f) Calibration and repair services for electrical and electronic test and monitoring equipment; pressure, vacuum, and temperature measuring devices; and mechanical measuring instruments.

(g) Technical assistance to units in diagnosing system or equipment problems and assistance in repairs, as necessary.

(h) Assistance in the emergency repair and manufacture of unavailable replacement parts or assemblies.

(3) Depot level (D-Level) maintenance requires skills, facilities, or capacities normally beyond those of the organizational and intermediate levels and is performed by Service depots,

original equipment representatives/authorized agents, or NAVFAC-designated overhaul points (DOP).

6.3.8 Modernization/Modification of Expeditionary Equipment

Modernization of expeditionary equipment will follow the guidance of the NAVFAC CMP. The CMP provides a process to deliver modernization and modifications to the Navy Expeditionary Forces. It defines a standard methodology to plan, budget, engineer, and install configuration items while maintaining configuration control.

6.3.9 CDMD-OA Data Flow

The CDMD-OA data flow begins with the unit submitting a Current Ship's Maintenance Plan that includes Maintenance Actions and Configuration Changes via the Revised Alternative Dataflow Web site. Configuration changes (OPNAV 4790/CK) flow through CDMD-OA Central Database to the CDM Server responsible for the particular Unit Identification Code (UIC). The CDMD-OA data flow diagram (Figure 6-1) presents a simplified version of the configuration management dataflow. The arrows show the dataflow from and to all entities that interface with CDMD-OA.

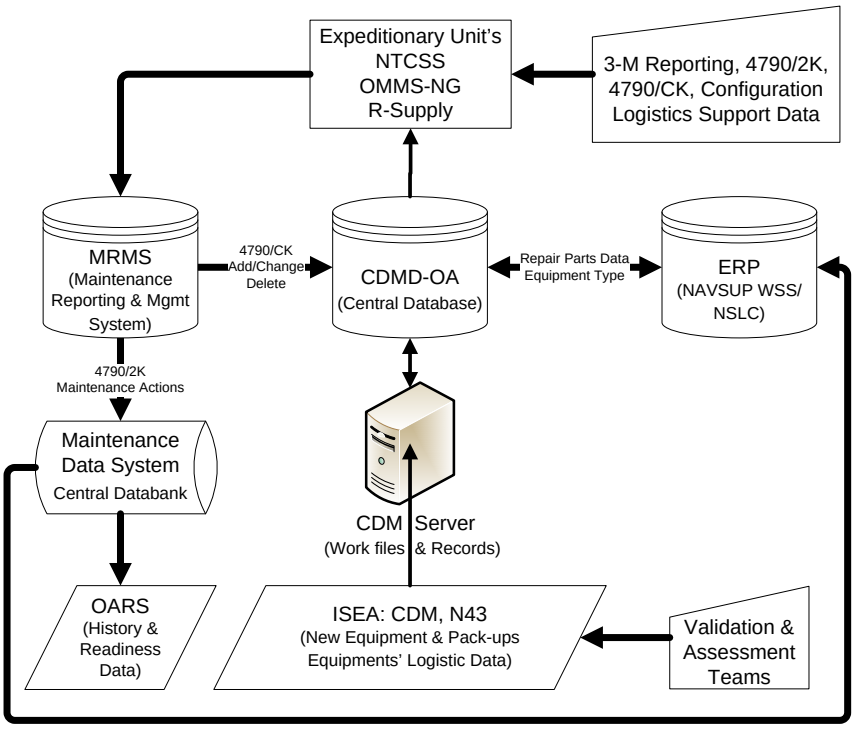

Figure 6-1. CDMD-OA Data Flow

6.3.10 Corrosion Control

Expeditionary equipment is often assigned to locations where atmospheric and environmental conditions can cause severe corrosion and a reduction in equipment readiness. Corrosion can be

prevented or mitigated by proper cleaning and the correct application and maintenance of protective coatings such as paint, undercoating, and preservatives. Body or hull corrosion occurs primarily where poor ventilation caused by clogged drain holes or accumulations of mud and sand allow moisture to remain on unprotected metal surfaces. NAVFAC S6360-AW-MMO-010 (Corrosion Prevention and Control Technical Manual) is the primary reference for all matters pertaining to corrosion control of expeditionary equipment.

6.3.11 Service Life, Repair and Replacement Determinations for Expeditionary Equipment

Prior to making extensive repairs to an end item, Fleet expeditionary equipment managers shall consult with PEIMs to evaluate the various repair and replacement alternatives to facilitate selection of the best alternative for the activity over the long-term. Appendix E discusses the life expectancy, cost of repair limits, the service life of equipment, and associated computations for determining equipment repair and replacement criteria, which are summarized as follows:

a. Life Expectancy Baseline. Life expectancy is the estimate of how long equipment should remain useful when operating under designed operating conditions. Each item of expeditionary equipment must have a life expectancy posted to the equipment record contained in EXMIS. The baseline life expectancy (or service life) is determined during the acquisition phase of the equipment's life cycle and should be included in acquisition documents such as the CDD, CPD or the awarded contract. As the equipment is employed and meaningful data is collected on performance, the estimated life expectancy will be updated by the NEPO PM and revised accordingly.

FIAR Notice

Equipment useful life is initially recorded in EXMIS as metadata on the item record as part of the TOA process as discussed in paragraph 3.5, and is required to determine the depreciated value of an asset.

b. Life Expectancy Factors. Various factors affect the life expectancy of equipment as determined at the time of acquisition. Based on Required Operating Capabilities and Projected Operational Environments (ROC & POEs), the following factors affect life expectancy of expeditionary equipment more significantly than others:

(1) Fatigue (weight/loads above or below design, usage greater than or less than designed)

(2) Environment (salinity/corrosion, temperature/humidity extremes/variances, substrate/ topography)

c. Repair Limits. Maintenance personnel must determine if an equipment repair is economical based on dollar cost and mission requirements. Decisions must be based on current value of the equipment in proportion to the acquisition cost. If repair is determined to not be economical, disposal procedures through the operational chain of command should be requested (refer to

paragraph 6.6). Waivers to exceed One Time Repair Limit (OTRL) shall only be granted by the appropriate NEPO PM.

d. Costing of Repair Estimates for Expeditionary Equipment. The cost criteria outlined in Appendix 7.3E.3should be used to determine whether it is more economical to repair or replace expeditionary equipment. Repair estimates shall include direct labor, material, indirect costs, and other direct charges.

6.3.12 Service Life Extension Program (SLEP)

In accordance with paragraph 010201 of Volume 2A, Chapter 1 of DoD 7000.14-R (Financial Management Regulation), a "major service-life extension program, financed in procurement, extends the life of a weapon system beyond its designed service life through large-scale redesign or other alteration of the weapon system." This entails the work necessary to restore the equipment to a level of serviceability adequate to support mission requirements during its extended life. Improvements to military and technical characteristics by alterations made in conjunction with such restoration may be included. The PM, in coordination with the ISEA and TYCOMs, is responsible for determining which items to SLEP and which items to recapitalize as part of the equipment lifecycle and replacement/recapitalization strategy.

SLEP involves a consolidated approach which reconciles force structure requirements and force planning, inventory projections, usage forecasts, planning factors, and cost, schedule and performance status of current programs and in-service fleets. SLEP will take into account obsolescence issues, diminishing manufacturing sources and material shortages, and changes in CONOPS. Typically, such work involves an extended downtime period beyond what is necessary for normally scheduled overhaul. SLEP constitutes an extension of the original capital investment in lieu of replacement by new procurement.

Restoration and overhaul of equipment at this level will be accomplished by contract or at a designated facility monitored by EXWC. To determine whether or not expeditionary equipment qualifies for SLEP, contact the appropriate NEPO PM identified in Table E-2. SLEP requires OPN funding, i.e., Operations and Maintenance Navy (O&MN) is not authorized to fund SLEP.

a. NEPO PMs are responsible for administering SLEP. When a SLEP is determined to be the favorable action, the PM is responsible for submitting budget requirements and validating the data prior to the piece being inducted into a SLEP. NEPO PMs also are required to develop and maintain SLEP standards for use by expeditionary equipment holders and depot level repair sites in order to establish induction and the level of effort required for the particular equipment being inducted.

b. NEPO is responsible for managing the SLEP process in concert with EXWC. The tasking delegated to EXWC includes: scope of work development, establishing and monitoring the contract, site visits, determination of induction candidates, funds management, acceptance inspections, and management of in-house service providers where applicable and other administrative duties as required to effectively manage the SLEP.

c. Expeditionary TYCOMs shall ensure subordinate activities are aware of the SLEP process when considering replacements for their units' expeditionary equipment. TYCOMs are also

responsible for coordinating with NEPO on recommendations for new allowances or unit replacement requirements, submitting annual requirements, and to determine SLEP candidate induction dates based on operational requirements of expeditionary units under their cognizance.

d. Expeditionary units are responsible for assisting their TYCOMs in evaluating the status of their equipment in order to identify the projected requirements and recommending the most economical means of satisfying the activity's requirements. NEPO will gather and consolidate the data during the annual buy plan process.

6.4 Operations

6.4.1 Expeditionary Equipment and Equipment Operator Testing and Licensing

The training and licensing requirements identified in the following table shall apply for the listed types of expeditionary equipment:

Expeditionary Equipment	Licensing Standards
CESE	NAVFAC P-300
Waterborne expeditionary equipment	OPNAVINST 3500.34G, Personnel Qualification Standards (PQS) Program[1,2]
Mobile cargo cranes	NAVFAC P-307, Management of Weight Handling Equipment
ExMHE	NAVSUP P-538, Management of Materials Handling Equipment (MHE) and Shipboard Mobile Support Equipment (SMSE)

Notes:

1. Each class of craft has an individually developed and approved PQS that is the standard of education required prior to qualification being attained for operating the craft. PQS can be downloaded from the Navy Knowledge Online website (Common Access Card required) at https://www.nko.navy.mil/.

2. Some states additionally may require a boater safety course be completed prior to operating Sealift Support expeditionary equipment. These courses test an operator's knowledge of sound signals, navigation aids, maneuvering, communication and safe operating practices. If a boating safety course is required, it shall be completed prior to beginning the operator PQS for the craft for which that qualification is being sought.

6.4.2 Transfers of Expeditionary Equipment

Transfer is defined as the action to permanently transfer equipment from one activity to another. It does not refer to the operational movement of equipment to augment or perform mission accomplishment. Navy expeditionary units are not authorized to transfer equipment without informing the EXWC PL. Units without disposition instructions transferring equipment shall

request approval and coordinate with the EXWC PL via the allowance holder. Any applicable TYCOM instructions/guidance also pertains. After approval is granted, equipment must be prepared for shipment to ensure its arrival in satisfactory condition. Disassembly for shipment shall be held to a minimum necessary to safeguard parts known to be subject to damage or loss. Major disassembly shall not be accomplished without prior approval. Units transferring in accordance with received disposition instructions are subject to the directions within the instruction.

a. Prepare Equipment for Shipment. Prepare for shipment as follows:

(1) Inspect and operationally test the equipment. Repair and service the equipment as required. Generate an OPNAV 4790/2K (Work Candidate/deferred maintenance action) to document all deferred repairs. A printed copy of the repair order shall be filed in the equipment record to provide basic information about the equipment's condition for the ultimate receiver.

(2) Ship all collateral equipages with the equipment, and include ARP, technical manuals, etc., unless otherwise directed.

b. Transfer Actions. After completion of the preparation for shipment, continue with the following:

(1) Mark the equipment for the consignee.

(2) Transfer the equipment to the appropriate Shipping Officer who shall assign a Transportation Account Code (TAC). The equipment should be stored at the staging area for the shortest time possible to reduce the possibility of deterioration, cannibalization, or theft.

(3) Ship the equipment by the first available means of transportation, unless otherwise directed. When possible check the equipment after it has been loaded and re-preserve or reseal any areas or openings disturbed by handling.

(4) Provide consignee with all shipping data, including USN/Hull registration number, number of items in shipment, type or name of conveyance, scheduled departure date, and estimated date of arrival at destination. When equipment is transferred, the equipment record accompany it. After the item is shipped, the allowance holder must inform the PEIM to update the record within EXMIS.

c. Updating EXMIS Inventory Records. When equipment is transferred to or from a Navy expeditionary unit, both the sending and receiving units shall notify EXWC who shall update the EXMIS inventory record(s) to reflect the transfer. Units receiving transfers of expeditionary equipment must perform a receipt inspection and report any discrepancies or deficiencies to EXWC and the sending command. Sending and receiving units shall support the updating of EXMIS inventory records by providing signed copies of the DD Form 1342 or DD Form 1149 via email to EXWC_General_Equipment@navy.mil within fifteen (15) calendar days of the transfer.

It is imperative to maintain inventory accountability of all assigned equipment especially during a temp loan situation, as such updating EXMIS location codes is important to maintaining

visibility of asset locations. Therefore movement of any assigned asset where the loan is in excess of 48 hours requires the property record in EXMIS be updated to reflect the actual physical location of assigned asset. Movement of assets will be documented in EXMIS in the "location code" data field. Units who have access to EXMIS are required to update these moves and units which do not have access must report moves to the PEIMs for record updating. Temporary loans in excess of 48 hours must have the appropriate sub-custody documentation applied. A DD Form 1342 or DD Form 1149 shall be used when transferring in a temporary loan situation.

FIAR Notice

EXMIS, as a DoN APSR, must accurately reflect current locations for all 2C cog equipment.

d. Discrepancies and Deficiencies. When discrepancies or deficiencies occur, Navy expeditionary units shall document them with sufficient information to enable initiation and processing of claims against carriers. NAVSEALOGCEN's PDREP website (https://www.pdrep.csd.disa.mil/) provides the following forms and guidance for reporting equipment discrepancies or deficiencies: Material Inspection Report, PQDR and SDR.

e. Intra/Inter-Service Procedures for Temporary Loan of Expeditionary Equipment. Activities are responsible for forecasting expeditionary equipment requirements to support new or expanded mission assignments and include them in their inventory objectives and budgets.

(1) When notification of new mission assignments does not allow sufficient time to procure new equipment, the Navy expeditionary forces shall consider temporary reassignment from existing resources, retention of in-service equipment scheduled for replacement, or, with NAVFAC approval, diversion of due-in assets or transfer/loan from other activities.

(2) When none of these options are available, the Navy expeditionary unit shall submit a formal request to NAVFAC via its TYCOM, for a temporary loan of equipment from a SYSCOM managed asset, another expeditionary TYCOM or service.

(a) Rotation of Expeditionary Equipment. Navy expeditionary forces must ensure expeditionary equipment is utilized efficiently in order to provide the right equipment quantities, types, and modernization to meet expeditionary missions. Part of the strategy is rotation of equipment. Increased mission requirements or Operations/Operating Tempo (OPTEMPO) are often imposed on Navy expeditionary forces, and the need to keep assets in theater leads to a higher than designed usage rate than what may be prudent for equipment maintenance and preservation. Other mission requirements, such as Maritime Pre-positioning Force (MPF) deployments, subject expeditionary equipment to less than designed usage rate. Commanders with expeditionary TOAs under their cognizance are responsible for periodically cycling expeditionary equipment through periods of use and non-use to ensure no single asset/capability or group of assets/capabilities shall be used significantly more than others. Any equipment transferred from one activity to another must be in condition A4 prior to being transferred to the receiving activity.

i. Intra-TYCOM Transfers for Rotation Purposes. For Navy expeditionary forces with a small inventory of assets, their TYCOM should make every attempt to perform intra-TYCOM transfers with assets from other Navy expeditionary forces.

ii. MPF / USMC Blount Island Command (BIC) Rotations. NEPO, in coordination NECC/NBGs/BIC, may direct the rotation of expeditionary equipment when assigning or transferring assets to and from MPF ships.

iii. Rotation Feasibility. Prior to any rotation, but especially for rotations involving movement of equipment outside of the geographic area, a cost benefit analysis should be conducted. PEIMs should be the first source of knowledge to assist in determining if rotation is advisable by whether or not it is in the best interest for maintaining their fleet of equipment.

iv. Stock Rotation. For Navy expeditionary forces with a large inventory of assets, rotation of equipment to and from operational theaters and equipment in storage or awaiting contingency deployment should be routinely performed.

6.4.3 Lease of CESE

One method of obtaining CESE outside the procurement system is leasing. Leasing of CESE shall be coordinated through the respective NAVFAC Base Support Vehicles and Equipment (BSVE) PM.

6.5 Materiel and Equipment Storage

a. General. While not in use expeditionary materiel and equipment may have a requirement to be stored. The concern depending on the environment is degradation if not properly prepared and maintained while stored. Storage of equipment is the decision of the activity that has stewardship. Expeditionary stewards of equipment are guided by local and higher headquarters instructions and procedures which should outline both indoor and outdoor storage. As a principle, any materiel or equipment stored for an extended period of time will be in accordance with MIL-STD 3003B. All equipment will continue to have the same maintenance requirements and be subject to MIPs and MRCs through 3-M. Additionally, a Care of Supplies In Storage (COSIS) process should be established to mitigate corrosion, hazardous material situations and loss of accountability. For materiel stored, shelf life items must be identified and a separate process established. The management of shelf life items are outlined in DoD 4140.27-M (Shelf-Life Item Management Manual).

b. Accountability. While materiel and equipment is in storage, custodial and management responsibilities will not change. Short term storage and Long term storage will be determined by the activity placing equipment and materiel in storage. Normally short term storage is considered six months or less. Regardless of the length of time materiel and equipment is stored, a disciplined practice for accountability and COSIS must be maintained. All equipment and materiel must be inventoried periodically and be easily accessible. Accountability is the responsibility of the custodial activity.

(1) The storage of parts for projects such as engineering change proposals is normally a function the SYSCOM and may be necessary for the planning and completion of projects. This

type of storage must be managed closely by the project leads and have a distribution plan for their application. Each kit or part must be inventoried on a periodicity to ensure condition and accountability. Project management may result in a residual balance of parts at the end of the project. These parts will require disposition and should not be kept stored.

(2) The goal of any equipment or materiel stored is that the condition and operational capability is consistent to when it was placed in stow.

6.6 Disposition of Expeditionary Equipment

A proactive disposition program is critical to management and sustainment of expeditionary equipment. Maintaining inventory at authorized allowance levels reduces the funding and manpower required to sustain equipment which is above what has been authorized for a unit to accomplish its mission.

There are multiple events which would result in disposition actions on assigned gear and that disposition can be initiated either by the SYSCOM or the unit. Typical SYSCOM-directed disposition efforts would be initiated as a result of TOA reductions or phased replacement of assigned gear. EXWC, via coordination with the unit and TYCOM, will issue disposition instructions to the unit once the new piece arrives at the unit. The unit may request authority to retain the specific USN which has been replaced but must provide a substitute USN which would typically have higher mileage/hours or be in worse shape than the one which is slated for removal.

A unit must request disposition of equipment which has been damaged beyond economical repair or one which has become a maintenance burden and the cost of sustaining that equipment greatly exceeds the average sustainment costs of like products. Navy expeditionary forces desiring to dispose of expeditionary equipment must send their requests to the PEIM via their respective TYCOM. Depending on current inventory, budgets, production contracts and other factors EXWC will determine whether or not it is feasible to retain the item within the Navy or issue directions to dispose of the equipment.

If the equipment is considered feasible to retain, EXWC will provide disposition instructions to retain the equipment at the activity, transfer to another activity, or an overhaul facility to return the equipment to FMC condition. Transfer will be executed in accordance with the guidance provided in paragraph 6.4.2.

If retention is not feasible, EXWC will issue disposal instructions. No repairs are to be performed prior to disposal. EXWC will direct the transfer of the equipment with its collateral equipage, attachments, and equipment record. All actions to dispose of expeditionary equipment shall be conducted in accordance with applicable laws and regulations to include:

- DoD 5000 guidance
- DoD 4140.1-R (Supply Chain Materiel Management Regulation)
- DoD 4160.21-M (Defense Materiel Disposition Manual)

- DoDI 4160.28 (DoD Demilitarization (DEMIL) Program)
- MIL-STD-882E (DoD Standard Practice for System Safety)
- OPNAVINST 4520.1B (Navy Demilitarization Policy)
- Local DLA Disposition Services procedures and standards

In general, the following actions are required once there is agreement on the specific USN which will be disposed:

- Units shall remove all military markings from equipment.
- Units must request and obtain EXWC approval for the removal of any parts.
- Within seven (7) days after completion of transfer actions, forward a copy (signed and dated by the receiving activity) of the transfer document, DD Form 1348-1 or DD Form 1149 via email to EXWC_General_Equipment@navy.mil.
- Figure 6-2 provides an example of the unit request form for TYCOM submission disposition instruction.
- Figure 6-3 provides an example of the SYSCOM directing disposition instructions.

For expeditionary equipment transferred to DLA Disposition Services, the disposing activity shall inform EXWC within seven (7) calendar days to ensure the accuracy of EXMIS inventory records. Disposing activities shall report this information by providing a signed copy of the DD Form 1348-1 or DD Form 1149 or DD 200 via email to EXWC_General_Equipment@navy.mil.

- Requests (unit via TYCOM) and response (EXWC) are on letterhead signed by authorized parties
- Unit submits Configuration Change Form (OPNAV 4790/CK)
- EXMIS and CDMD-OA updated by EXWC
- Container disposition updated in ACAMS
- Acceptance documentation signed by authorized receiver
- Signed acceptance documentation saved in EXMIS by EXWC as an attachment to the Asset Record
- If receiver is DRMO, end item is moved to DRMO storeroom (ends NAVFAC's accountability)

FIAR Notice

Asset records must accurately record the custodian and location. As such, for a transfer of an asset from one unit to another unit, the appropriate documents listed above must at a minimum contain the USN and the UIC of the releasing unit and the UIC of the receiving unit. For an item being disposed, the inventory status of the asset must be updated in EXMIS to disposed and the asset transferred to storeroom 10105. The Key Supporting Document shall be attached in EXMIS to the asset record.

4500
Ser
Date

From: Command/Unit
To: Commanding Officer, Navy Facilities Engineering and Expeditionary Warfare Center (NAVFAC EXWC)
Via: Chain of command

Subj: DISPOSITION OF EXPEDITIONARY EQUIPMENT

Ref: (a) Management of Expeditionary Equipment

1. Per reference (a), request disposition instructions for the following equipment.

Stock Number:
USN/Hull registration number :
Description:
Year of manufacture:
Accumulated miles/hours:
Condition Code:
Damage description:
Estimated cost to repair to A4 condition:
TOA: (or state if excess from allowance)
List of assigned attachments:
(state any other pertinent information about the item that would influence final disposition)

2. Point of contact is (rank/rate/name) at commercial phone number: _____, DSN: _____, E-Mail: _____.

(Designated official)

Copy to:
Director, NAVFAC Expeditionary Programs Office (NEPO)

Figure 6-2. Request for Disposition of Expeditionary Equipment (TYCOM) (example)

4500
Ser
Date

From: Commanding Officer, Navy Facilities Engineering and Expeditionary Warfare Center (NAVFAC EXWC)
To: Command/Unit
Via: TYCOM

Subj: DISPOSITION OF EXPEDITIONARY EQUIPMENT

Ref: (a) Management of Expeditionary Equipment

1. Per reference (a), NAVFAC has programmed a phased replacement of USN# _____, we anticipate the replacement piece to be delivered in XXQTR FYXX. As such NAVFAC is directing that USN#_____ be disposed of within sixty (60) days of receipt of your replacement expeditionary equipment at your unit. If for some reason you desire to swap out a different USN due to extenuating circumstances please contact the POC listed in paragraph 2 for direction.

Stock Number:
USN/Hull registration number :
Description:
Year of manufacture:
TOA: (or state if excess from allowance)
List of assigned attachments:
(state any other pertinent information about the item that would influence final disposition)

2. Point of contact is (rank/rate/name) at commercial phone number: _____, DSN: _____, E-Mail: _____.

(Designated official)

Copy to:
Director, NAVFAC Expeditionary Programs Office (NEPO)

Figure 6-3. Request for Disposition of Expeditionary Equipment (SYSCOM) (example)

Chapter 7. ACCOUNTABILITY

NAVFAC is accountable for all centrally-managed expeditionary equipment, and this equipment is "assigned for use" to the end item user commands, who have custody of and are responsible to maintain the equipment.

7.1 Expeditionary Management Information Systems (EXMIS)

EXMIS is NAVFAC's business system to support the expeditionary enterprise and is designated by FMO as the APSR for NAVFAC-managed expeditionary equipment. As such EXMIS is a key tool to ensure expeditionary assets are validated for existence and completeness.

EXMIS is an integrated IT solution with the following capabilities:

- Contains the official repository for CNO-approved TOAs
- Supports the procurement of equipment and material to outfit and sustain the TOAs
- Provides processes to support cradle-to-grave management of expeditionary equipment
- Contains all required data elements to support FIAR reporting
- Is a financial feeder system for financial reporting
- Contains Assets Records and associated transactional records to track movements in excess of 48 hours

FIAR Notice

In accordance with DoDI 5000.64 (Accountability and Management of DoD Equipment and Other Accountable Property), "an asset property record shall only be reported in a single APSR." As such, given EXMIS is the APSR for 2C COG assets, these assets shall not be recorded in Defense Property Accounting System (DPAS) or other APSRs.

7.2 Financial Improvement and Audit Readiness (FIAR)

The DoD Strategic Management Plan establishes specific business goals to further articulate needed changes in DoD's "business domain" and to structure unity of effort across the enterprise. One of these goals is to "Strengthen DoD financial management to respond to Warfighter needs and sustain public confidence through auditable financial statements."

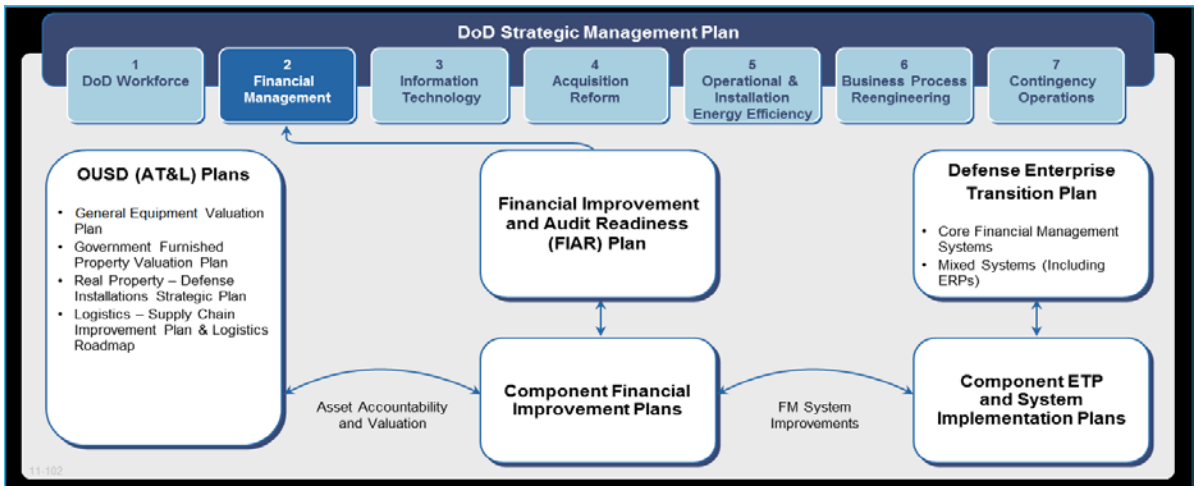

Figure 7-1. DoD Strategic Management Plan Relationship to Financial Management

The purpose of the FIAR Plan as shown in Figure 7-1 is to improve the Department's financial management operations and ensure favorable audit opinion on the Department's financial statements. To support this plan, effective management of mission critical assets is essential, especially with regards to existence and completeness. Expeditionary mission critical assets include:

- Inventory (INV) - Inventory is defined as tangible personal property that is held for sale, in the process of production for sale, or to be consumed in the production of goods for sale or in the provisions of services for a fee. Inventory excludes stockpile materials.

- Operating Material and Supplies (OM&S) - DoD defines OM&S as tangible personal property to be consumed in normal operations. Department of the Navy OM&S is comprised of material such as replacement parts, components, assemblies and residual assets that are to be consumed in normal operations but are not held for sale. OM&S shall be categorized as Material Held for Use, Material Held in Reserve for Future Use, Material Held for Repair or Remanufacture, or Material Held as Excess, Obsolete or Unserviceable. Examples of OM&S include but are not limited to:
    - Spare and repair parts and materials that are not part of the NWCF inventory held for sale
    - Ordnance, including decoys and targets that have a relatively short expected useful life (excluding nuclear/chemical missiles)
    - Uninstalled Aircraft Engines and other centrally managed material (non NWCF inventory) regardless of material condition
    - Spare attachments to end items (when not attached) that are interchangeable with other parts and are not stand alone end items (e.g. aircraft pods, bulldozer blades, towed sonar arrays, servers, routers or other Commercial Off The Shelf Information Technology material)
    - Items removed from decommissioned/cannibalized vessels or aircraft that are required to support future operating force requirements (non NWCF inventory)

- General Equipment (GE) - General PP&E consists of tangible assets that meet all of the following criteria:
    - have an estimated useful life of two years or more;
    - are not intended for sale in the ordinary course of operations;
    - are acquired or constructed with the intention of being used or being available for use by the entity; and
    - have an initial acquisition cost, book value, or when applicable, an estimated fair market value (see paragraph 060202 for definitions of these terms) that equals, or exceeds, DoD capitalization threshold. The DoD capitalization threshold is $1,000,000, except for real property assets. The threshold for real property assets is $20,000.

  Assets that had previously been classified as National Defense PP&E, i.e. weapons systems and related support equipment are now classified as General PP&E. (These assets were reclassified as General PP&E in the Statement of Federal Financial Accounting Standards No. 23). These weapons systems are referred to as military equipment. In addition to the requirements of FMR 060103.A.1 (a through d), military equipment items are intended to be used by the Armed Forces to carry out battlefield missions, are referred to as military equipment. Examples include: combat aircraft, pods, combat ships, support ships, satellites, and combat vehicles. Additional guidance follows:
    - Military equipment does not ordinarily lose its identity or becomes a component part of another article; and is available for the use of the reporting entity for its intended purpose.
    - Intangible assets, such as software, are not considered military equipment; however, the cost of the intangible asset shall be included in the cost of the related military equipment.
    - Military equipment assets are generally functionally complete and should be valued based on the cost of the final assembly, including the cost of embedded items.

To achieve audit readiness and reliability of financial statements, accurate and complete financial, procurement, and inventory information is required, to include:

- Individual Item Identifier (e.g., UII, USN, VIN, Hull #)
- Category/Asset Type (e.g., CESE, Expeditionary Facilities, Sealift Support, PGI, etc.)
- Location (e.g., JEB Little Creek, Naval Base San Diego, etc.)
- Record Holder UIC
- Property Holder UIC
- Operational Status (e.g., active, disposed)
- Item Description (e.g., stock number descriptions)

- Controlling/Financial Reporting Organization (e.g., NAVFAC).
- Custodial/User Organization
- Acquisition Date
- APSR
- Asset Review Date (Last Physical Inventory Date)
- Acquisition Cost
- Useful Life
- Secondary Unique Identifier (IUID)
- Posting Reference (PO#, Contract #, etc)

This information, as well as other management and financial information, is recorded in the official system of record, EXMIS, as the APSR.

7.3 Existence and Completeness

Existence and completeness are the financial accountability terms which confirm APSR records show items that truly exist (existence) and that actual property can be reconciled back to a record in the APSR (completeness). Existence and completeness also requires a rolling three year physical verification of all assets. This verification must be certified by Commander, Naval Facilities Engineering Command.

The following processes are being leveraged to update the "Last Physical Inventory" field in EXMIS and will reduce, but not eliminate, reporting requirements for custodians and NAVFAC in support of the three year inventory requirement:

- Equipment repair action recorded in 3-M – NAVFAC will pull quarterly reports from OARS to capture USNs which have had a repair action recorded.
- Material Readiness Assessments (MRA) – The TYCOM will provide to NAVFAC, under cover letter within forty-five (45) days of the assessment, the MRA report identifying the USNs physically verified during the assessment.
- Unit Commander turnover inventories – Either the unit or the TYCOM will provide to NAVFAC the Signed Commander Turnover inventory report within forty-five (45) days of signed acceptance.
- NAVFAC Expeditionary Assist Team (NEAT) visits – The NEAT will provide the listing of all assets physically touched and verified within fifteen (15) days of their visit.

- Properties Transferred In or Out – The transferring units or the TYCOM will provide NAVFAC with the following documentation within seven (7) calendar days of generation:
    - Materials and Receiving Report - DD Form 250,
    - DoD Property Record –DD Form 1342,
    - Requisition and invoice/Shipping Document - DD Form 1149,
    - Issue Release/Receipt Document - DD Form 1348-1A – Disposal Turn-In Document (DTID) or,
    - Financial Liability Investigation of Property Loss – DD Form 200.
- CDM Validation—NAVFAC will pull quarterly reports from CDMD-OA to capture USNs which have had a CDM validation completed.
- TYCOM annual CESE unit/command inventories – Either the unit or the TYCOM will provide to NAVFAC, under signed cover letter, the unit/command's annual inventory report with forty-five (45) days of signature.
- Annual Port Hueneme and Gulfport inventory for assets under NAVFAC control – EXWC will provide to NAVFAC, under cover letter within fifteen (15) days of completion, the inventory listing for each warehouse location.

A physical verification will need to be conducted for any registered asset that has not been touched within the prior two years by one of the above processes. NAVFAC will issue a listing of equipment requiring verification on a quarterly basis to the custodian with a courtesy copy provided to the TYCOM. The custodian will be responsible for completing the verification of assets for each of the listed items within ninety (90) days of the request. The verification must be signed by the Commanding Officer or his/her designee.

If an item cannot be found in inventory, please notify EXWC within ten (10) days to allow for further research within the APSR. Once it is determined that the asset is not locatable, a DD Form 200 shall be completed by the custodian and signed at the appropriate command level. The DD Form 200 shall be prepared in accordance with paragraph 0706 of Volume 12 to DoD 7000.14-R. The signed DD Form 200 shall be forwarded to EXWC for required FIAR documentation per paragraph 7h(1)(d) of SECNAVINST 7320.10A (Department of Navy Personal Property Policies and Procedures).

Periodic internal "book to floor" and "floor to book" audits will be performed to verify data accuracy ahead of external auditor checks.

FIAR Notice

General equipment accountability is one of the top improvement initiatives of the DoD Financial Improvement Plan. Favorable audit opinions occur at a 95% or higher accuracy rate. It is imperative to maintain system accuracy at all times in support of the NAVFAC Expeditionary Life Cycle Manager role for the Navy and to ensure success of accountability.

APPENDIX A. ACRONYMS AND ABBREVIATIONS

Acronym	Defined
3-CCP	3-Color Camouflage Patterns
3-M	Maintenance and Material Management
AAP	Abbreviated Acquisition Program
ABFC	Advanced Base Functional Component
ACAMS	Army Container Asset Management System
ACAT	Acquisition Category
ACL	Allowance Components List
AEL	Allowance Equipage List
AF	Acceleration Factor
AOA	Analysis of Alternatives
APL	Allowance Parts List
APSR	Accountable Property System of Record
ATTLA	Air Transportability Test Loading Agency
BIC	Blount Island Command
BSO	Budget Submitting Office
BSVE	Base Support Vehicles & Equipment
CARC	Chemical Agent Resistant Coating
CASREP	Casualty Report
CBA	Capabilities Based Assessment
CCB	Configuration Control Board
CDD	Capability Development Document
CDMD-OA	Configuration Data Managers Database – Open Architecture
CESE	Civil Engineering Support Equipment
CID	Commercial Item Description
CFR	Code of Federal Regulations
CMP	Configuration Management Plan
CNO	Chief of Naval Operations
COG	Cognizance Symbol
CONOPS	Concept of Operations
COP	Configuration Overhaul Planning
COSAL	Coordinated Shipboard Allowance List
COSIS	Care of Supplies in Storage
COTS	Commercial Off-the-Shelf
CPD	Capability Production Document
CSE	Common Support Equipment
DAS	Defense Acquisition System
DFARS	Defense Federal Acquisition Regulation Supplement
DLA	Defense Logistics Agency
DoD	Department of Defense
DoN	Department of the Navy
DOT	Department of Transportation
DOTmLPF-P	Doctrine, Organization, Training, Materiel, Leadership Policy and

Acronym	Defined
	Education, Personnel, Facilities, and Policy
EXCOM	Executive Committee
EXMIS	Expeditionary Management Information System
EXWC	Engineering And Expeditionary Warfare Center
FAR	Federal Acquisition Regulation
FIAR	Financial Improvement and Audit Readiness
FLIS	Federal Logistics Information System
FYDP	Future Years Defense Program
GCWR	Gross Combination Weight Rating
GSA	General Services Administration
GVWR	Gross Vehicle Weight Rating
HMMWV	High Mobility Multipurpose Wheeled Vehicle
ICD	Initial Capabilities Document
ID Number	Identification Number
IGCE	Independent Government Cost Estimate
IOC	Initial Operating Capability
INLS	Improved Navy Lighterage System
IPS	Integrated Product Support
ISEA	In-Service Engineering Agent
IUID	Item Unique Identifier
JCIDS	Joint Capabilities Integration and Development System
KPP	Key Performance Parameter
KSA	Key System Attribute
LARC-V	Lighter, Amphibious Resupply, Cargo, 5 ton
LI	Line Item
LSSV	Light Service Support Vehicle
LOTS	Logistics Over-the-Shore
MHE	Material Handling Equipment
MIP	Maintenance Index Page
MOGAS	Motor Gasoline
MPF	Maritime Pre-positioning Force
MPT	Manpower, Personnel and Training
MRA	Material Readiness Assessments
MRAP	Mine Resistant Ambush Protected Vehicle
MRC	Maintenance Requirement Card
MTVR	Medium Tactical Vehicle Replacement
NAVFAC	Naval Facilities Engineering Command
NAVFACENGCOM	Naval Facilities Engineering Command
NAVICP	Naval Inventory Control Point (Now NAVSUP WSS)
NAVSEA	Naval Sea Systems Command
NAVSEALOGCEN	Naval Sea Logistics Center
NAVSUP	Naval Supply Systems Command
NAVSUP-WSS	Naval Supply Systems Command Weapon Systems Support (Formerly NAVICP)

Acronym	Defined
NDI	Non-Development Item
NEAT	NAVFAC Expeditionary Assist Team
NEC	Navy Enlisted Classification
NECC	Navy Expeditionary Combat Command
NECE	Navy Expeditionary Combat Enterprise
NEPO	NAVFAC Expeditionary Programs Office
NLL	Navy Logistics Library
NSN	National Stock Number
NSTM	Naval Ships' Technical Manual
NSWC	Naval Surface Warfare Center Naval Special Warfare Command
NSWC CD-SSES	NSWC Carderock Division – Ship Systems Engineering Station
NTSP	Navy Training System Plan
NWCF	Navy Working Capital Fund
O&MN	Operations & Maintenance, Navy
OARS	Open Architectural Retrieval System
OEM	Original Equipment Manufacturer
OM&S	Operating Material and Supplies
OPN	Other Procurement, Navy
OPNAV	Office of The Chief of Naval Operations
OPTEMPO	Operations/Operating Tempo
OTRL	One Time Repair Limit
PDREP	Product Data Reporting and Evaluation Program
PE	Program Element
PEIM	Principal End Item Manager
PEO	Program Executive Office
PHS&T	Packaging, Handling, Storage and Transportation
PL	Program Lead
PM	Program Manger
PMO	Program Management Office
PMS	Planned Maintenance System
POA&M	Plan of Actions and Milestones
POE	Projected Operational Environment
POM	Program Objectives Memorandum
PPBE	Planning, Programming, Budgeting and Execution
PQDR	Product Quality Deficiency Report
PQS	Personnel Qualification Standards
PSP	Product Support Package
PWS	Performance Work Statement
RCM	Reliability-Centered Maintenance
ROC	Required Operational Capabilities
SDR	Supply Deficiency Report
SECNAV	Secretary of the Navy
SIXCON	Six Container (Container Consisting of One Fuel Pump Module

Acronym	Defined
	And 5 Fuel Tank Modules)
SLEP	Service Life Extension Program
SOW	Statement of Work
SPP	Sponsor Program Proposal
SYSCOM	Systems Command
TAC	Transportation Account Code
TDMIS	Technical Data Management Information System
TFBR	Technical Feedback Report
TM	Technical Manual
TMDE	Test, Measurement And Diagnostic Equipment
TOA	Table of Allowance
TYCOM	Type Commander
UIC	Unit Identification Code
UON	Urgent Operational Need
USA	United States Army
USAF	United States Air Force
USFFC	United States Fleet Forces Command
USMC	United States Marine Corps
USC	Using Service Code
USN	United States Navy
VIN	Vehicle Identification Number

APPENDIX B. DEFINITIONS

Accountable Property Systems of Record (APSRs): The purpose of APSRs is to ensure asset accountability and important management information relevant to mission critical assets is accurately recorded in an official record keeping system.

Advanced Base Functional Component (ABFC): A grouping of personnel, facilities, equipment, and material designated to perform a specific Chief of Naval Operations approved mission.

Assigned for Use: All NAVFAC life-cycle managed expeditionary equipment is "assigned for use" to the end item user commands who have custody of the equipment. As the custodian of the equipment they are responsible for positive control of this equipment as well as equipment administration, operation, manning, safety, security, repair and maintenance. They are also responsible for developing and submitting budgets needed to fund their efforts and for the establishment of maintenance policies within current policy and guidelines. NAVFAC is **accountable** for this equipment. End users have **custody** of this equipment.

Authorized Equipment: Equipment that has been authorized by the respective resource sponsor and is listed in the Table of Allowance (TOA).

Automotive Vehicle: Any self-propelled motor vehicle designed for highway or cross-country operations. Specifically included are buses, sedans, trucks, carryalls, station wagons, ambulances, refuelers, defuelers, truck trailers, brush, structural, aircraft fire fighting, and rescue operation trucks. It does not include bicycles, vehicles designed primarily for use on rails, construction equipment, materials handling equipment, amphibious vehicles, or vehicles (with or without armor) designed for active participation in combat.

Civil Engineering Support Equipment (CESE): Expeditionary CESE includes automotive vehicles, construction, weight handling, and associated types of equipment, afloat and ashore.

Cognizance Symbol (COG): A U.S. Navy unique identifier to specify life-cycle material management responsibilities. COG is a two digit alphanumeric code prefixed to national stock numbers to identify the cognizant inventory manager for the U.S. Navy plus the stores account and the type of material. The first character of the cognizance symbol identifies the stores account as follows: "0" denotes material is not carried in a stores account; even numbers 2, 4, 6, and 8 denote material carried in Appropriation Purchase Account. Additional information on COGs can be found in the NAVSUP P-485 (Naval Supply Procedures).

Commercial Motor Vehicle: A vehicle that:

- has a manufacturer's gross vehicle weight rating (GVWR) or gross combination weight rating (GCWR) of 26,001 pounds or more, or has a GCWR, inclusive of a towed unit with a GVWR of more than 10,000 pounds, or
- is designed to carry 16 or more passengers, including the driver, or is of any size and used in the transportation of hazardous materials in a quantity requiring placards by federal law or regulations.

Construction Equipment: All mechanical equipment used in the construction, alteration, or repair of buildings, bridges, roads, or other kinds of real property. It includes pile drivers, power shovels and cranes with special attachments, road rollers, tractors, scrapers, plows, street sweepers, sprinkle carts, etc.; and portable boilers, pumps, and air compressors. It also includes such stationary machines and mechanical apparatus as rock crushing plants, concrete batching and mixing plants, and similar equipment used exclusively in the construction and maintenance of public works. When used as a general term, "Construction Equipment" includes mobile weight handling equipment and equipment such as "man lifts" not normally associated with the term construction equipment.

Deactivated Equipment: Equipment removed from service with no intention of reactivation at a later date.

Equipage: Items which require management control due to any one or a combination of high unit cost, vulnerability to pilferage, and/or essentiality to the ship's mission. Equipage does not encompass installed mechanical, electrical, ordnance, or electronic equipments, components, or systems. Equipage items generally are identifiable to end-use applications.

Excess equipment: Equipment exceeding the authorized quantity depicted in the Table of Allowance (TOA).

Expeditionary: In the context of this publication, "expeditionary" is synonymous with "deployable". Used throughout this publication as an adjective to qualify the following noun is not "stationary" and is specific to military requirements involving forward deployed. The antonym for "expeditionary" as used in this publication is "garrison" or "non-deployable, base support".

Expeditionary Facilities: Deployable, self-contained capability for hygiene (laundry, shower and latrine), berthing, food service, medical and dental, operations centers, maintenance and warehousing for the expeditionary forces. Enables operations and force sustainment at austere locations where no infrastructure exists. Can also augment existing locations.

Expeditionary Material Handling Equipment (ExMHE): MHE used to equip and sustain expeditionary forces to execute combat, combat support, and combat service support missions. ExMHE belongs to expeditionary activities that are either forward-deployed units or whose mission is in direct support of those units. There are two major categories of ExMHE: 1) garrison ExMHE, which is under the cognizance of BSVE, and 2) deployable ExMHE, which is under the cognizance of the NAVFAC Expeditionary Programs.

Financial Improvement and Audit Readiness (FIAR): The goal of the FIAR program is to improve the Department's financial management operations. Success will be demonstrated through a financial statement audit performed by independent auditors resulting in an unqualified audit opinion on the DoD financial statements by FY2017.

Garrison: In the context of this publication, "garrison" is synonymous with "non-deployable" or "base support". The antonym for "garrison" as used in this publication is "expeditionary" or "deployable".

Inactive Equipment: Any equipment intentionally placed into a hibernated state for a period of time with the intention of reactivating the equipment at a later date.

Inventory Objective: This term is defined as the quantity of equipment authorized to be held in inventory. The sum of each primary stock number authorized Navy-wide becomes the inventory objective and is utilized in the annual Civil Engineering Support Equipment budget.

Inventory: This term is defined as the equipment on-hand and carried on the activity plant account records. This equipment shall be used to fill authorized inventory objectives.

Life Cycle Cost: The total cost to the government of acquisition and ownership of a system over its useful life. It includes the cost of development, acquisition, operations and support (to include manpower), and disposal.

Logistics Over-the-Shore (LOTS): U.S. Navy LOTS is a compilation of equipment that provides the capability for loading and unloading of ships without the benefit of deep draft-capable, fixed port facilities; or as a means of moving forces closer to tactical assembly areas.

Maintenance: Denotes all work functions performed on expeditionary equipment to determine, prevent, or correct physical damage and mechanical malfunctioning in the degree necessary to continue or restore the equipment to a safe and serviceable condition. This includes the functions designated as inspection, lubrication, adjustment, service, repair, rebuild, part replacement, overhaul, and rehabilitation.

Material Handling Equipment (MHE): All self-propelled equipment approved for use in storage and handling operations in and around warehouses, shipyards, industrial plants, airfields, magazines, depots, stocks, terminals, aboard U.S. Navy ships, and at expeditionary bases, camps and job sites. It includes, but is not limited to: warehouse tractors, forklift trucks, platform trucks, pallet trucks, straddle carrying trucks, container cargo loader (K-loader), afloat and ashore warehouse self-propelled wheeled industrial cranes (up to 30,000 pounds capacity), shipboard aerial work platforms, shipboard scissor platforms, and non-powered shipboard pallet trucks. There are two major categories of MHE: 1) non-expeditionary MHE, for which the Naval Supply Systems Command (NAVSUP) has cognizance, and 2) expeditionary MHE, for which NAVFAC has cognizance.

Motor Vehicle: Any self-propelled vehicle designed and operated for transporting property or passengers.

NAVFAC Expeditionary Equipment: Expeditionary equipment managed by NAVFAC.

Navy Expeditionary Forces & Units: U.S. Navy shore-based, non self-deployable forces and units.

Non-Tactical Vehicle: Any commercial motor vehicle, trailer, material handling, or engineering equipment that carries passengers or cargo acquired for administrative, direct mission, or operational support of military functions.

Overhaul: To disassemble/dismantle in order to examine thoroughly and make needed repairs to equipment, an assembly, or a component of an assembly.

Principal End Item Manager (PEIM): EXWC individual responsible for managing the life cycle of assigned equipment, materiel and/or system.

Program Objectives Memorandum (POM): An annual memorandum in prescribed format submitted to the Secretary of Defense by the DoD component heads which recommends the total resource requirements and programs within the parameters of the Secretary of Defense's fiscal guidance. A major document in the planning, programming and budgeting system; is the basis for the budget. The POM is the principal programming document which details how a component proposes to respond to assignments in the defense planning guidance and satisfy its assigned functions of the future year's defense program. The POM shows programmed needs for 5 or 6 years and include manpower, force levels, procurement, facilities, research and development.

Railway Equipment: Navy-owned locomotives and rolling stock designed primarily for use on rails.

Repair: Those maintenance functions which restore individual parts, components, or assemblies of an equipment unit to a safe, serviceable condition. This includes unit overhaul and unit replacement.

Required Operational Capabilities/ Projected Operational Environment (ROC/POE): The ROC and POE provide the necessary details to describe the mission areas, environment, and operational capabilities for which the unit was designed and organized. They provide resource agencies with information concerning the unit mission, requirements, capabilities, and the types and locations of expected operations. Together, the ROC and POE establish tasking which produces a measurable workload used to compute manpower requirements for the Activity Manpower Document.

Resource Sponsor: A resource sponsor is a Deputy or Assistant Chief of Naval Operations or Director of a Major Staff Office, who is responsible for programming all resources to support his/her specific mission area.

Sealift Support: Sealift Support systems provide the capability for a continuous and sustained flow of personnel, material and liquids from Strategic Sealift and commercial vessels to expeditionary forces ashore.

Service Life Extension Program (SLEP): Any one-time group of major repairs or overhauls specifically planned and scheduled over a limited period of time which has the effect of extending the service life of the equipment beyond what was previously planned and returns the equipment to "like new" condition.

Service Life: A product's service life is its expected lifetime, or the acceptable period of use in service. It is the time that any manufactured item can be expected to be 'serviceable' or supported by its manufacturer. Synonymous terms may include: Designed Service Life,

Economic Useful Life; Equipment Useful Life, Expected Service Life, Useful Service Life, and Life Expectancy.

Suitable Substitutes: This equipment meets the minimal capabilities requirement of the prime stock number. Suitable substitutes in inventory shall count against the authorized allowance until replaced by the prime stock number.

Table of Allowance (TOA): A complete listing of Chief of Naval Operations approved equipment and material authorized as allowance for a specific unit.

Tactical Vehicle: A vehicle or trailer designed or modified to meet military specifications to support military transportation requirements in combat or tactical operations, or for associated training requirements.

USN/Hull Registration Number: A United States Navy registration number is a unique serialized number marked on all USN vehicles and some equipment and watercraft.

U.S. Navy Expeditionary Equipment: Systems and material used by United States Navy's expeditionary units. U.S. Navy Expeditionary Equipment is also defined systems and material documented in U.S. Navy Tables of Allowance (TOAs) as described in OPNAVINST 4040.39C.

Weight Handling Equipment: Includes mobile or transportable truck, crawler and railway mounted locomotive cranes normally used for lifting, moving, and placing heavy material or equipment. The term also includes captive cranes of the gantry/portal and hammerhead type which are not included in the CESE program. (For detailed WHE terms and instructions, see NAVFAC P-307).

0N COG: Secondary Items supporting Naval Expeditionary Forces systems and material. 0N COG material consists of unique TOA items subject to special monitoring, testing and controls to ensure safety and compatibility with allowance items; equipment repair parts, components and assemblies subject to engineering control decisions during production or prior to issue. EXWC is the inventory manager for all items except those assigned for use. Source of identification is the TOA, APLs and the Advance Base Functional Components (NAVFAC P-437). Material is not carried in a stores account (normal Navy supply systems). The figure below shows the relationship between 2C and 0N COG material.

Major Equipment (2C COG)		**Secondary Equipment (0N COG)**	
Item		NSN	Item
Trk Tract 6 x 4 DED		0N 3895-LL-LCC-8789	Cab Replacement
Grader, Road		0N 6675-LL-LC3-8068	Laser, Dual Grade

2C COG and 0N COG Material Examples

APPENDIX C. REFERENCES

Digital copies for many of these documents are available at https://assist.dla.mil/.

The latest revision/most current edition of all reference materials shall apply.

American Society of Testing Materials

D 4814B, Motor Gasoline (MOGAS)

Commercial Item Description (CID)

CID A-A-52357A, Diesel Fuel

CID A-A_52624A, Antifreeze

Department of Defense

DoD Strategic Management Plan FY 2014 – FY 2015

DoD 4140.1-R, Supply Chain Materiel Management Regulation

DoD 4140.27-M, Shelf-Life Item Management Manual

DoD 4160.21-M, Defense Materiel Disposition Manual

DoDI 4160.28, DoD Demilitarization (DEMIL) Program

DoD 4500.36-R, Management, Acquisition, and Use of Motor Vehicles

DoD 5000.01 Defense Acquisition System

DoDI 5000.64, Accountability and Management of DoD Equipment and Other Accountable Property

DoD 7000.14-R, Financial Management Regulation

OUSD Military Equipment Useful Life Study (31 March 2007)

OUSD Military Equipment Useful Life Study – Phase II Final Report of May 30, 2008

Department of Transportation, 400 Seventh St NW. Washington, DC 20590

Federal Highway Administration Motor Carrier Safety Regulations

Federal Specifications

Federal Acquisition Regulation

Fleet Forces Command Publications

COMFLTFORCOMINST 4790.3 (series), Joint Fleet Maintenance Manual

Joint Chiefs of Staff

CJCSI 3170.01H, Joint Capabilities Integration and Development System

Military Standards and Specifications

MIL-STD-882E, DoD Standard Practice for System Safety

MIL-STD-1839C, Calibration and Measurement Requirements

NAVFAC Publications

Expeditionary Systems and Equipment Life Cycle Configuration Management Plan (CMP) (DRAFT)

NAVFAC Planning Yard Management Plan (DRAFT)

NAVFACINST 4081.1A, Acquisition Logistics Manual

NAVFACINST 4200.1, Contracting Officer's Representative

NAVFACINST 4423.1, Navy Expeditionary Table of Allowance (TOA) Development and Revision Policy and Processes

NAVFACINST 5400.10, Virtual SYSCOM Engineering and Technical Authority Policy

P-300 Management of Civil Engineering Support Equipment

P-307 Management of Weight Handling Equipment

P-437 Advanced Base Functional Components

S6360-AW-MMO-010, Corrosion Prevention and Control Procedures for US Navy Expeditionary Ground Equipment

NAVSEA Publications

SW020-AF-HBK-010, Motor Vehicle Driver and Shipping Inspector's Handbook for Ammunition, Explosives and Related Hazardous Materials

S9086-TX-STM-010, Boats and Small Craft (NSTM Chapter 583, Volume 1, Revision 5)

NAVSUP Publications

NAVICPINST 4441.170, COSAL Use and Maintenance Manual

P-485 Naval Supply Procedures

P-538 Management of Materials Handling Equipment (MHE) and Shipboard Mobile Support Equipment (SMSE)

Naval Warfare Publications

NWP 1-03.1, Operational Reports

OPNAV Publications

OPNAVINST 3500.34G, Personnel Qualification Standards (PQS) Program.

OPNAVINST 4040.39, Navy Expeditionary Table of Allowance and Advanced Base Functional Component Policy

OPNAVINST 4460.1B, Management of Material Handling Equipment and Shipboard Mobile Support Equipment in Navy

OPNAVINST 4520.1B, Navy Demilitarization Policy

OPNAVINST 4700.7, Maintenance Policy for United States Navy Ships

OPNAVINST 4790.4, Ship's Maintenance and Material Management (3-M) System Policy

OPNAVINST 5102.1D, Navy & Marine Corps Mishap and Safety Investigation, Reporting, and Record Keeping Manual

OPNAVINST 11240.8, Management of Civil Engineering Support Equipment in the Navy

SECNAV Directives

SECNAVINST 4855.3, Product Data Reporting and Evaluation Program

SECNAVINST 5000.2E, Department of the Navy Implementation and Operation of the Defense Acquisition System and the Joint Capabilities Integration and Development System

SECNAVINST 5400.15 DoN Research and Development, Acquisition, Associated Life-Cycle Management, and Logistics Responsibilities and Accountability

SECNAVINST 7320.10A, Department of Navy Personal Property Policies and Procedures

United States Code

Title 41 Part 102-34, Motor Vehicle Management

Title 49 Part 397, Transportation of Hazardous Materials; Driving and Parking Rules

USMC Manuals

USMC TM 4750-OD/1, Painting, Coating, Underbody and Registration Marking For Marine Corps Combat and Tactical Equipment

USMC TM 4750-OD/2, Camouflage Paint Patterns

APPENDIX D. EXPEDITIONARY EQUIPMENT ATTACHMENT MANAGEMENT

Attachments are accessories to construction equipment that enable the basic equipment to perform its function or to add versatility to the equipment. Some attachments are usable with many different types of equipment, whereas some can be used only by a particular make and model machine. Attachment management follows the same basic principles as USN number control.

D.1 Objective. Proper registration and management are essential to prevent attachments from becoming separated from the basic machine and lost or inadvertently discarded. Proper stowage and preservation will also help prevent expensive attachments from being rendered useless by oxidation and damage.

D.2 Attachment Identification

a. ID Number Assignment. Attachment ID numbers are assigned by the PEIM and contain three separate segments: (1) prefix, (2) abbreviation and (3) sequential number to identify the attachment. There have been several different conventions used throughout the years; however, regardless of the actual character identification sequence, the requirement is to have each attachment positively identified by a unique and traceable identification number. The following table provides two examples of attachment IDs.

ID Number	Segment	Description
Example A		A01000 – BACKHOE
255-BH-001	Prefix is 255	Indicates both manufacturer's make and model or attachment size: P&H Model 255-A-TC.
	Abbreviation is BH	An abbreviation for the noun name of the attachment: backhoe.
	Number is 001	Sequential number assigned by EXWC when the attachment is registered.
Example B		A13000 – DRAGLINE BUCKET
11-DB-10	Prefix is 11	Attachment size: 2 cubic yards.
	Abbreviation is DB Number is 10	An abbreviation: dragline bucket. Sequential number.

b. ID Number Request. If an activity receives an attachment without the required Attachment ID Number, the receiving activity shall request one by initiating an Equipment Attachment Registration Record Card, NAVFAC Form 6-11200/45 (Figure D-1) for each attachment. After this registration card is completed in accordance with the following instructions, two copies shall be submitted to appropriate PEIM via the Allowance Holder, if appropriate. Retain one copy in the appropriate equipment history jacket.

Equipment Attachment Registration Record NAVFAC 6-11200/45 (1-70) S/N 0105-LF-06-6500				23. NAVFAC ID NO.	
1. Attachment Code	2. Type Attachment			3. Model No.	4. Serial Number
5. Length (inches)	6. Width (inches)	7. Height (inches)	8. Cubes (Cubic Feet)	9. Size/Capacity	
10. Manufacturer (Name and Address)				11. Weight (lb)	12. USN
13. Short Description		14. Name	15. Model		16. Year
17. Accessories					
18. Assigned to	19. Date Received	20. Acquisition Cost $	21. Julian Date Registered	22. NAVFAC ID No.	

Figure D-1. NAVFAC Form 6-11200/45

c. EXWC Verification. Upon receipt of a NAVFAC Form 6-11200/45, the PEIM shall verify the information, assign an ID number if required, enter all available data into the EXMIS inventory system, and return completed copies of the registration card. The attachment ID number shall be placed in the Allowance Holder's inventory in EXMIS, which then causes an Equipment Identification Load Sheet for the newly registered attachment to be forwarded to the Allowance Holder.

d. Affixing ID Number. Upon receipt of the returned NAVFAC Form 6-11200/45, the custodian shall permanently affix the ID number to the attachment. Attachment ID numbers shall be two inches high and permanently welded to the portion of the attachment least subject to normal wear. Where it is not desirable to weld directly on the attachment, as in the case of crane booms and hooks, the ID number shall be welded on a metal plate of appropriate size and then permanently affixed to the attachment. The NAVFAC Form 6-11200/45 shall then be filed in the equipment history jacket of the equipment to which the attachment is assigned.

D.3 Unit Level Tracking. An Attachments Status Board is an excellent tool for listing all of the attachments and their parent USN assignment. This board is normally maintained in the Cost Control or the Dispatch Office. The following information is typically displayed:

- Code/Assembly
- Attachment ID number
- Abbreviated description from EXMIS
- The USN number of the equipment to which the Attachment is assigned

- Work Center (same as the equipment to which the Attachment is assigned)
- Location and remarks.

Code/ Assembly	Attachment ID No.	Description	USN No. Assigned	PMG	Location and Remarks
A01000	L175B-BH-5	Backhoe	45-01799	17	Attachment Pad
A02500	255-BB-56	Boom Butt	42-01778	9	42-01778
A03000	32-BE-72	Boom Ext.	82-03173	14	Attachment Pad

Figure D-2. Attachments Status Board

D.4 Storage and Preservation. Attachments shall be properly stored on hardstand (concrete pad, matting), to keep them out of sand, mud, and water, and to allow drainage of rain water from buckets or other areas where water may accumulate. Cover attachments if possible. Attachments and accessories shall be routinely inspected for accountability, proper stowage, and preservation. Stowage shall be accomplished in the following manner, if not specifically detailed in approved 3-M procedures:

a. Cables, sheaves, and bolt threads shall be lubricated and preserved as required to ensure they remain in good condition.

b. Nuts shall be screwed onto the corresponding bolts and located in their respective holes, when possible.

c. Boom pendants shall be attached to the boom extensions; cables shall be coiled, tagged, and attached to clamshell buckets, backhoe, and shovel front attachments, to minimize loss and to expedite the changeover from one operation to another.

d. Attachment accessories such as lagging, bucket teeth, chains, sprockets, and wedges shall be placed in a box or on pallets and marked for the appropriate attachments and stored in Collateral Equipment.

e. Exposed machine surfaces, such as hydraulic rams, and openings into critical areas shall be preserved and covered to prevent deterioration and damage.

f. Hydraulic lines and fittings shall be sealed to prevent dirt and moisture from accumulating in the hydraulic system.

g. Stowage shall be maintained to ensure all attachments belonging to one USN number are stowed together.

h. Rust shall be removed from affected areas by proper means. Areas shall be primed and painted to prevent further corrosion during preventive maintenance cycles.

D.5 Attachment Transfer or Disposal. Prior to action, approval is required from the unit's Operational equipment manager via the chain of command. The PEIM will notify the PM and

update EXMIS accordingly. Transfer or disposal of equipment attachments shall be accomplished as follows.

a. Reassignment from One USN Number to Another. Submit one copy of the updated NAVFAC Form 6-11200/45 to the Equipment Allowance Holder if appropriate. Transfer one copy of the registration card to the new equipment history jacket. The Allowance Holder must then update EXMIS, via the PEIM.

b. Transfer to Another Activity. Unless otherwise instructed in the shipping directive, all attachments (with accessories) for a particular piece of equipment shall be prepared and transferred along with the machine. Put all small attachments with accessories in a box and then ship the with the parent machine. The Allowance Holder must then update EXMIS, via the PEIM.

c. Attachment Disposition. Unless otherwise requested on the disposal request, all attachments (with accessories) for a particular piece of equipment shall be disposed of along with the machine. After the item has been transferred, the Allowance Holder must update EXMIS, via the PEIM.

APPENDIX E. LIFE EXPECTANCY AND COST OF REPAIR LIMITS

This appendix includes:

- Methodologies (with examples) for obtaining the life expectancy and how to adjust it based on actual operational conditions and observed fatigue.
- Equipment life expectancy, associated terms, and factors affecting life expectancy, and categorizes expeditionary equipment for life expectancy determinations.
- Equipment repair versus replacement decisions.

E.1 Equipment Life Expectancy

This appendix discusses Life Expectancy and Service Life of equipment. This should not be confused with Program Life Expectancy. Program Life Expectancy pertains to the amount of time a capability is required. It is not uncommon for equipment life expectancy to be much less than the program life expectancy, requiring equipment to be replaced throughout the program life cycle.

a. Life Expectancy. Life expectancy is defined as the probable remaining operating life of an end item in terms of utility to the owner. Life expectancy can be expressed in terms of time (e.g., years/hours) or use (e.g., miles/cycles).

b. Service Life. Service Life is defined as an item's expected operating life prior to any use. It is determined at the time of acquisition and is normally included as a part of the requirements documentation such as the Capabilities Production Document (CPD) and/or Performance Specifications.

c. Life Expectancy is equal to Service life minus Usage (Life Expectancy = Service Life - Usage).

d. Life Expectancy Adjustments. Expeditionary equipment is designed to perform within defined environmental and usage constraints. Mission requirements may dictate occasional or even routine operation outside of constraints, leading to the equipment reaching the end of its Service Life more quickly. In such cases Acceleration Factors (AFs) are applied to the methodology as stated in E.2 below in order to adjust the life expectancy of the affected equipment when budgeting for repair or maintenance.

Acceleration Factors depend on the type of equipment. An AF applied to one type of equipment cannot be arbitrarily applied to different equipment. For example, equipment designed to operate in a high salinity environment such as a watercraft shall not have an AF applied for salinity, whereas a small truck driven on the beach would. Acceleration Factors change depending on equipment usage and how far out of design constraints the equipment has been operated.

Lower usage than estimated may of course lengthen the equipment life expectancy. Also, equipment designed to be operated in harsh environments could have a longer life expectancy than designed if operated in milder environments.

Table E-1 lists possible contribution to accelerated use; this listing is not all-inclusive but it provides examples of common issues to consider. User shall contact NEPO PMs for guidance on particular AFs for equipment.

Extremes Temperature Solar Chemical, Biological, Radiological, Nuclear and high- yield Explosives (CBRNE) Acidity/Alkalinity Weight Limit Engine Load Towing (Trailer) Pushing (Mine Roller) Elevation/Depth Low Oxygen High Pressure Moisture Salinity Humidity	Maintenance Deferred maintenance Fine Particles (Airborne) Dust/Sand/Soot/Ash Fuel JP5, JP8, D2 High or UL Sulfur Gasoline Grade Terrain Substrate Paved vs. non-Paved Snow/Ice Mud/Sand Grading (Hills/Mountains) Vibration/Cyclic Loading Rough Terrain Rough Water/Waves

Table E-1. Usage Rate Considerations

e. Usage Rate and OPTEMPO. Usage rate is the rate at which the equipment is being used or operated. Equipment is given a "designed" usage rate (normally found in the Capabilities Production Document (CPD)) and/or Performance Specifications. It is also common to use the term Operating Tempo or OPTEMPO when describing usage rates and, in practice, the terms OPTEMPO and "usage rate" are interchangeable.

E.2 Life Expectancy Calculation Methodology

a. Service Life Guidance for Equipment Users. Determination of Service Life is the starting point for life expectancy calculations. Once Service Life is known, the user should apply AFs if known to usage rates to determine an accurate life expectancy. This can be used for planning, budgeting, TOA management, or other purposes. The most recent data should always be used, and can be found in the Expeditionary Management Information System (EXMIS). However, if EXMIS is not available, or the data is missing, service life can still be obtained via the NEPO PM. The following paragraphs lay out the logic path for determining equipment Service Life and describe the flowchart presented in Figure E-1.

1) If EXMIS is available, confirm the most recent data by checking EXMIS.

2) If EXMIS is not available, utilize Table E-5. It contains Service Life data for a subset of equipment in the current expeditionary inventory as of the date of publication.

3) If the Service Life cannot be obtained through EXMIS or Table E-5, contact the appropriate NEPO PM identified in Table E-2 to obtain equipment service life information.

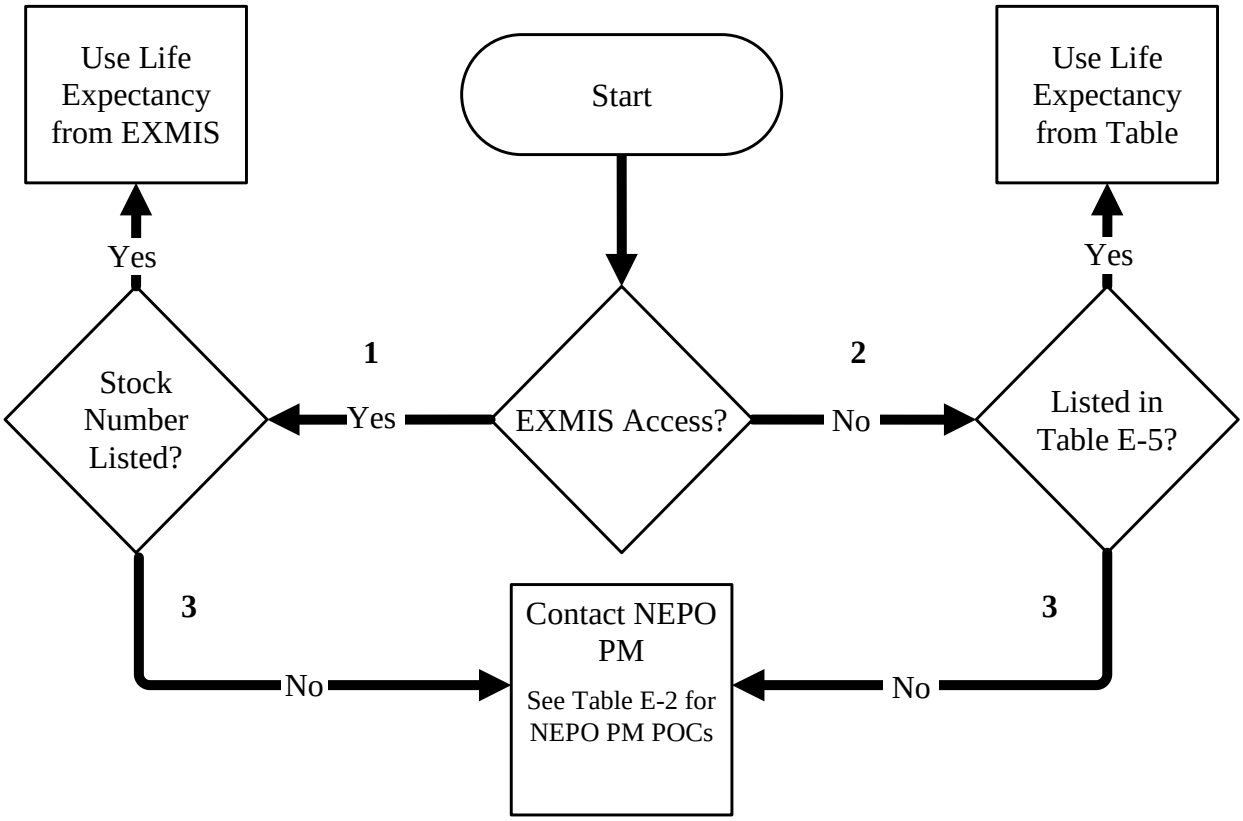

Figure E-1. Life Expectancy Flowchart for Equipment Users

Email	Phone	Website
NAVFAC_HQ_NEPO_EXBL @NAVY.MIL	202-685-6002	https://www.navfac.navy.mil/ products_and_services/ex.html

Program Managers (and example expeditionary equipment being managed)				
PM Motor Transport	**PM Heavy Construction**	**PM Light Construction**	**PM Expeditionary Facilities**	**PM Sealift Support**
Light Service Support Vehicle (LSSV)	Dozer	Electric	Berthing	MPF Utility Boat
HMMWV	Excavator	Water Systems	Containers	INLS
Joint Light Tactical Vehicle	Grader	Pump	Hygiene	Elevated Causeway (Modular)
MTVR	Backhoe	Compressor	Laundry	Amphibious Bulk Liquid Transfer System
MRAP	Cranes	Generator	Food Service	LARC V
Heavy Truck Tractor	Dump	Environmental Control Unit	Command Operating Center	Landing Craft Mechanized, Mark 8
Trailers	Scraper	Fuel Systems	Medical/Dental	
Commercial Vehicles	Volumetric Concrete Mixer	Reverse Osmosis Water Purification Unit	Storage/ Warehousing	
Special Purpose Vehicles	Rock Crusher	Tools	Workshops/ Maintenance	
	Chip Spreader	TMDE		
	Roller			
	Sweeper			
	Concrete Plant			
	Asphalt Plant			
	Loaders			
	Rock Drill			
	Water Well			
	Dump, Off Hwy			
	Dump Articulating			
	Hammer Pile			
	Extractor Pile			
	ExMHE			

Table E-2. NEPO PM Contact Information

b. Service Life Guidance for NEPO Managers. In cases where Service Life information is neither documented in EXMIS or Table E-5, NEPO PMs should follow the below guidance.

After determining equipment Service Life, update EXMIS for future reference by equipment users. The following paragraphs lay out the logic path for determining equipment Service Life and narrate the flowchart in Figure E-2.

1) Determine the lead service: Utilize the NSN and conduct a search in the Federal Logistics Information System (FLIS) database. Under the "Management" header, "Using Service Code (USC)", locate the "L" (Lead). Trace the "L" to the corresponding Major Organizational Entity.

Note when an identification number is not an NSN (e.g. Local Stock Number), it is not searchable in FLIS and the lead service is assumed to be the Navy.

2) If the DoN (DN field in WebFLIS) is the lead service, contact the applicable SYSCOM program office to obtain acquisition documentation (e.g., Capabilities Production Document (CPD), program office engineering estimates, or service life of like equipment). Upon receipt of these documents, proceed to Step 4 below.

3) If the Navy is not the lead service, forward a Request For Information (RFI) to the appropriate service's program office for the equipment. Specific information to request.

    (a) What is/was the life expectancy at time of acquisition (Service Life)?

    (b) When was the equipment fielded?

    (c) Is maintenance documentation available?

    (d) What is the designed operating environment? – (Performance Specification)

        - Terrain (e.g. paved roads, desert, etc.)?
        - Climatic range (e.g. humidity, temperature, etc.)?
        - Exposure to salinity (e.g. use in or near the maritime environment)?

    (e) Are there any known factors improving or degrading life expectancy?

    (f) Are there fielded and installed modifications and engineering changes?

    (g) Has the impact of such factors been documented?

4) Update the equipment Service Life field within EXMIS using the following precedence:

    (a) PM supported engineering estimates

    (b) Contract or Acquisition documents showing Life expectancy

    (c) Life expectancies of like equipment

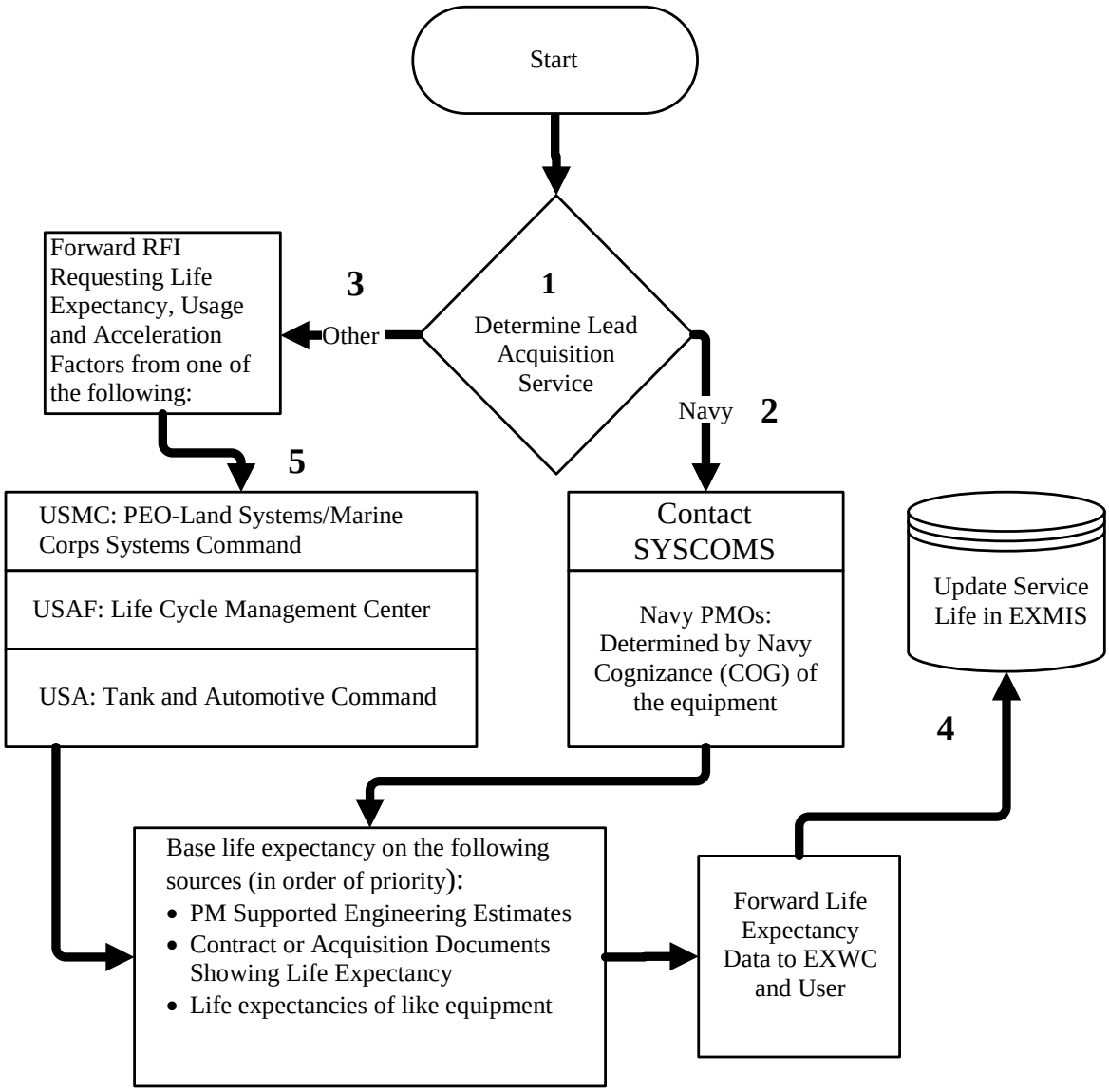

Figure E-2. Life Expectancy Flowchart for NEPO PMs

c. Usage and Acceleration Factors (AFs). Figure E-3 provides a methodology for applying AFs and adjusting equipment Life Expectancy. NEPO PMs and EXWC PEIMs can use this method to plan and budget for equipment overhaul or replacement. Maintenance personnel can use this method to adjust equipment age when determining whether to repair or replace an item. This method can be used for a single piece of equipment or a fleet of "Like-Assets". The default AF is 1.0 unless a different AF is requested from the PM as discussed in paragraph E.1d.

$$\boldsymbol{Assets\ Consumed} = \sum(\boldsymbol{Losses}) + \left\{\frac{\sum(\boldsymbol{Designed\ For\ Usage}) + (\sum(\boldsymbol{Not\ Designed\ For\ Usage}) * (\mathbf{1} + \boldsymbol{AF}))}{\boldsymbol{Service\ Life}}\right\}$$

$\sum(\quad)$ = Summation; add all like values together.

Losses = Total number of like assets that are considered total loss.

Designed for Usage Rate = Summation of the total usage of all active and stored equipment operated within design limits.

Not Designed for Usage Rate = Summation of the total usage of all active and stored equipment operated outside design limits.

Note: Usage may be expressed in terms of asset Age (years), Distance (miles driven), Time Operated (hours) or cycles.

Service Life = Expected life for a piece of equipment as designed (from Part I). Service Life units and Usage units must match (e.g., years, miles).

AF = The Acceleration Factor applied to equipment when not used as intended/as designed. Multiple AFs, if applied together, are summed. The default AF is 1.0.

Assets Consumed = Number of assets that have reached life expectancy.

$$\boldsymbol{Percent\ of\ Life\ Consumed} = \left\{\frac{\boldsymbol{Assets\ Consumed}}{\boldsymbol{Total\ Assets}}\right\} * \mathbf{100}$$

Total Assets = The number of like assets being considered in the analysis.

Percent of Life Consumed = Life used in terms of percentage of Service Life that has been consumed by the total number of assets considered in the Life Expectancy Adjustment Formula.

Figure E-3. Life Expectancy Adjustment

EXAMPLE - Life Expectancy Adjustment

*Note: Per OUSD Military Equipment Useful Life Study – Phase II Final Report of May 30, 2008, operation of vehicles over their designed GVWR is the primary factor for accelerating fatigue on HMMWVs. The study concluded for HMMWVs, the AF equated to 0.01 per 1% over GVWR. The M1151 HMMWVs average operating weight was 27.27% above its GVWR, leading to an AF of 0.2727. Average operating weight and GVWR differs between HMMWVs

and will need to be determined on a case-by-case basis in order to calculate the correct AF. M1151 information from the OUSD study was used in the example below.

Entering Information:

Vehicle: M1116A HMMWV
Quantity assigned to Unit: 5
Assets Loss: 1 (Destroyed in accident)
Present Age: 5 years for all vehicles
Life Expectancy: 15 years (from Table E-5)
Life Expectancy: 60,000 miles (from Table E-5)
Acceleration Factor: 0.27 (Up Armor weight is 27% over design weight) per OUSD Military Equipment Useful Life Study – Phase II of May 30, 2008 (0.01 per 1% over design weight)

Vehicle 1:	9,000 Miles No Up-Armor (NUA), 4,000 Miles Up-Armor (UA)	
Vehicle 2:	8,000 Miles NUA;	7,000 Miles UA
Vehicle 3:	10,000 Miles NUA;	7,500 Miles UA
Vehicle 4:	Destroyed (Loss)	
Vehicle 5:	Storage (0 Miles)	

-All Vehicles operated 1 Year without Up-Armor, 4 years Up-Armored.
-Vehicle 5 has not been operated; its age has not been accelerated.
-Vehicle 4 was determined to be a total loss. Usage and Age are not added into the "Designed for" and "Not Designed for" portion of the Life Expectancy Equation.

Life Expectancy Adjustment

Losses = Vehicle 4 = 1 loss
Designed-For Usage = NUA miles = 9K+8K+10K+0K = 27,000 miles
Not Designed-For Usage = UA miles = 4K+7K+7.5K+0K = 18,500 miles
Designed-For Usage = NUA years = 1+1+1+0 = 3
Not Designed-For Usage = UA year = 4+4+4+0 = 12
Service Life = 15 years/60,000 miles
AF = .27
Total Assets = 5

<u>In Miles</u>:

$$\boldsymbol{\begin{matrix}\textit{Assets}\\ \textit{Consumed}\end{matrix} = 1 + \left\{\frac{27,000 + (18,500 * (1 + .27))}{60,000}\right\} = 1.842}$$

$$\boldsymbol{\begin{matrix}\%\ \textit{Of Life}\\ \textit{Consumed}\end{matrix} = \left\{\frac{1.842}{5}\right\} * 100 = 36.832\%\ \textit{of total available miles consumed}}$$

$$\boldsymbol{\begin{matrix}\textit{Adjusted}\\ \textit{Fleet Age}\end{matrix} = 36.832\%\ \textit{of}\ 60,000\ \textit{Miles} = 60,000 * 0.3683 = 22,098\ \textit{Miles Driven}}$$

In Years:

$$\boldsymbol{Assets\ Consumed} = \mathbf{1} + \left\{\frac{\mathbf{3} + (\mathbf{12} * (\mathbf{1} + .\mathbf{27}))}{\mathbf{15}}\right\} = \mathbf{2.216}$$

$$\%\ \boldsymbol{Of\ Life\ Consumed} = \left\{\frac{\mathbf{2.216}}{\mathbf{5}}\right\} * \mathbf{100} = \mathbf{44.32\%}\ \boldsymbol{of\ adjusted\ life\ expectancy\ years}$$

$$\boldsymbol{Adjusted\ Fleet\ Age} = \mathbf{44.32\%}\ \boldsymbol{of}\ \mathbf{15}\ \boldsymbol{Years} = \mathbf{15} * .\mathbf{4432} = \mathbf{6.648}\ \textbf{Years old}$$

Interpretation of results from this example:

a. The HMMWV was designed for a 15 Year Service Life at an OPTEMPO of 4,000 miles per year when operated within design constraints. When operated within the design constraints the expected values would be: Age of 5 and usage of 20,000 Miles, or 33% of Age and Usage. However, increased OPTEMPO and Up Armoring of the vehicles represent acceleration factors that decrease Service Life.

b. Program and Life Cycle Managers should use both Usage and Age adjusted values to evaluate the status of their program and plan for repair, replacement, or overhaul budgets and schedules. As an example of the utility of these calculations - an acquisition program may need to be started earlier than originally planned if the equipment it is replacing is not going to last as long as originally anticipated.

c. The number of miles operated outside of design limits (up armor weight & increased OPTEMPO) increases the usage from the expected 33% to 36.83%. Maintainers should expect to see a corresponding increase in maintenance requirements. This data can be used for budgeting and preventive maintenance scheduling.

d. The amount of time operated outside of design limits (up armor weight & increased OPTEMPO), increases the age from the expected 33% to 44.32%. Although the fleet has an actual age of 5 years, the adjusted age is 6.65 years. Maintainers should expect to see a corresponding increase in maintenance requirements. This data can be used for budgeting and preventive maintenance scheduling.

E.3 Repair versus Replacement Determinations

Determination of repair versus replacement of equipment is based on the type of equipment, its age, its usage, and cost of repairs. Adjusted life expectancies (see E.2) provide entering arguments to consider in making a rational, quantitative determination. To determine if equipment is economical to repair, the One Time Repair Limit (OTRL) must be determined. The OTRL is the maximum amount allowed to be spent to repair a piece of equipment and is defined as:

a. Tactical Vehicles. Tactical vehicles shall not be repaired if repair estimates are greater than 65% of original acquisition cost.

b. Non-Tactical Vehicles. Table E-3 provides the OTRL computation factors for determining whether vehicles shall be repaired or not.

c. Other expeditionary equipment. Table E-4 provides the OTRL computation factors for determining return on investment of repair.

Note: All expeditionary equipment shall be retained in service for at least one year beyond the completion of repairs.

NEPO PMs may authorize exceptions to the repair versus replacement criteria when replacement equipment is not readily available and the continued use of otherwise uneconomically repairable equipment is determined to be mission essential. In these cases, units should forward requests for retention to the NEPO PM identified in Table E-2, indicating equipment condition and estimated costs of repair.

EXAMPLE – Determining OTRL:

Vehicle: 072661 Overhead Maintenance Aerial Service Platform Truck
Adjusted Present Age: 5 Years (as determined by Figure E-3)
Service Life: 12 Years
Initial Procurement Cost: $220,839

Using Table E-4, the Service Life Line of 12 years intersects with the present age of 5 years at 55%.

Multiply $220,839 (initial procurement cost) by 55% equals $121,461 (OTRL).

The repair costs shall not exceed $121,461.

Computation Factors for Use in Determining
One Time Replacement Limit (OTRL) For Non-Tactical Vehicles

Vehicle Type	Present Age in Years As Adjusted[1]																				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Percentage against vehicle acquisition cost
Ambulances, All	92	84	76	68	60	52	44	36	28	20											
Bus, Body on Chassis, to 37 adult pax	92	84	76	68	60	52	44	36	28	20											
Bus, Body on Chassis, over 37 adult pax	93	87	80	73	67	60	53	47	40	33	27	20									
Bus, Integral	93	87	80	73	67	60	50	47	40	33	27	20									
Truck, ¼ - ¾ Ton, under 7,000 (carryalls, minivans, pickups, etc.)	92	84	76	68	60	52	44	36	28	20											
Truck and Truck Tractor, 1 and 2 Ton, 7,000 to 18,999 lb GVW	92	84	76	68	60	52	44	36	28	20											
Truck and Truck Tractor, 2½ to 4 Ton, 19,000 to 23,999 GVW	92	84	76	68	60	52	44	36	28	20											
Truck and Truck Tractor, 5 to 10 Ton, 24,000 to 39,999 GVW	93	87	80	73	67	60	50	47	40	33	27	20									
Truck and Truck Tractor, 11 Ton and over, 40,000 and up GVW	93	87	80	73	67	60	50	47	40	33	27	20									
Trailers and Semi-Trailers: General Use	96	92	88	84	80	76	72	68	64	60	56	52	48	44	40	36	32	28	24	20	
Trailers and Semi-Trailers: Tank (all types)	95	89	84	79	73	68	63	57	52	47	41	36	31	25	20						
Trailers and Semi-Trailers: Mechanical Elevating or Lifting Type Bodies	92	84	76	68	60	52	44	36	28	20											

Notes:

* - All Figures in columns under age in years as adjusted are percentage factors to be applied against the vehicle acquisition cost in determining the current and projected wholesale value.

1 - Life expectancy adjustments must be applied prior to determination of Age in years.

Table E-3. OTRL Computation Factors for Non-Tactical Vehicles

	PRESENT EQUIPMENT AGE (YRS)																									
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**
SERVICE LIFE (YRS)	3	75	48	20																						
	4	75	57	38	20																					
	5	75	61	47	33	20																				
	6	75	64	53	42	31	20																			
	7	75	65	56	47	38	29	20																		
	8	75	67	59	51	43	35	27	20																	
	9	75	68	61	54	47	40	33	26	20																
	10	75	69	63	57	51	45	39	33	24	20															
	11	75	70	65	60	55	50	44	36	32	26	20														
	12	75	70	65	60	55	50	45	40	35	30	25	20													
	13	75	70	65	60	55	50	45	40	36	32	28	24	20												
	14	75	71	67	63	59	55	51	47	43	38	32	28	24	20											
	15	75	71	67	63	59	55	51	47	43	39	35	31	26	23	20										
	16	75	71	67	63	59	55	51	47	43	39	35	32	29	26	23	20									
	17	75	71	67	63	59	55	51	47	44	41	38	35	32	29	26	23	20								
	18	75	71	67	63	59	56	53	50	47	44	41	38	35	32	29	26	23	20							
	19	75	72	69	66	63	60	57	54	51	48	45	42	39	36	33	30	27	24	20						
	20	75	72	69	66	63	60	57	54	51	48	45	42	39	36	33	30	27	24	22	20					
	21	75	72	69	66	63	60	57	54	51	48	45	42	39	36	33	30	28	25	24	22	20				
	22	75	72	69	66	63	60	57	54	51	48	45	42	39	36	34	32	30	28	26	24	22	20			
	23	75	72	69	66	63	60	57	54	51	48	45	42	40	38	36	34	32	30	28	26	24	22	20		
	24	75	72	69	66	63	60	57	54	51	48	46	44	42	40	38	36	34	32	30	28	26	24	22	20	
	25	75	72	69	66	63	60	57	54	52	50	48	46	44	42	40	38	36	34	32	30	28	26	24	22	20

Percentage against equipment acquisition cost

Table E-4. OTRL Computation Factors for Other Expeditionary Equipment

Description	Life Expectancy (Years)	Miles
Motor Transport		
LSSV	**14**	**72,000**
HMMWV	**15**	**60,000**
MTVR - TACTICAL	**22**	
MRAP	**15**	
BUSES	**10**	**84,000**
COMMERIAL LIGHT TRUCK/SEDAN	**10**	**72,000**
COMMERCIAL MEDIUM TRUCK	**12**	**72,000**
COMMERCIAL MED SPECIAL PURPOSE	**12**	**72,000**
COMMERCIAL TRUCK TRACTOR	**12**	**150,000**
TRAILERS	**20**	
COMMERCIAL HEAVY TRUCK	**20**	**150,000**
FIRE TRUCK	**12**	
ATV	**10**	
Heavy Construction		
EXCAVATOR	**14**	
GRADER	**12**	
LOADER	**10**	
CRANE	**12**	
ROLLER	**10**	
TRACTOR CRAWLER	**14**	
WATER WELL DRILL	**12**	
PILE DRIVER/EXTRACTOR	**10**	
SWEEPER	**10**	
ROCK DRILL	**10**	
AUGER	**10**	
DUMP (OFF HWY & ARTICULATING)	**10**	
AGGREGATE CHIP SPREADER	**10**	
CONCRETE BATCH PLANT	**12**	
ROCK CRUSHER	**12**	
PLANT WASH/SCREEN	**12**	
ASPHALT PAVER	**12**	
MIXING PLANT, ASPHALT	**12**	
MIXER, BITUMINOUS MATERIAL, SELF-LOADING	**12**	
MIXER, SOIL STABILIZATION	**12**	
MIXER, CONCRETE, TRUCK MOUNTED	**12**	
TRANSIT MIXER	**12**	
CONCRETE MIXER	**12**	
DISTRIBUTOR, BITUMINOUS MATERIAL	**12**	
DISTRIBURTOR, ASPHALT	**12**	
DISTRIBURTOR, WATER	**12**	
CONVEYOR BELTS	**12**	
CONCRETE PUMP TRUCK	**12**	
KETTLE, HEATING, BITUMEN	**12**	
DITCHING MACHINE	**12**	
SCRAPER, WHEELED	**12**	
Light Construction		
GENERATOR	**19**	
COMPRESSOR	**10**	
FLOODLIGHT	**17**	
WELDERS	**10**	
SAWS	**15**	
ECU	**19**	
LUBE SKIDS & SERVICING UNITS	**15**	
TRUCK CLEANER SEPTIC TANK MOUNTED	**12**	

Description	Life Expectancy (Years)	Miles
DECONTAMINATING APPARATUS	**17**	
Sealift Support		
UTILITY BOAT (UB), 40' WORKBOAT	**20**	
IMPROVED NAVY LIGHTERAGE SYSTEM (INLS)	**20**	
WARPING TUG (WT)		
POWER MODULE (PM)		
BEACH MODULE (BM)		
INTERMEDIATE MODULE (IM)		
DOCKING MODULE (DM) - RRDF / FLOATING CAUSEWAY		
RAMP MODULE (RM) - RRDF / FLOATING CAUSEWAY		
COMBO MODULE (CM) - RRDF / FLOATING CAUSEWAY		
LIGHTER AMPHIBIOUS RESUPPLY CARGO 5-TON (LARC-V) A1/A2	**10**	
BOAT HOIST MOBILE CRANE STRADDLE-CARRY 150 TON	**12**	

Table E-5. Table of Service Life

The Operating Conditions Selection Guide in Table E-6 lists normal and severe operating conditions for multiple equipment types. This list provides guidance on when an Acceleration Factor may need to be applied during severe operations. The value will need to be determined/ estimated on a case-by-case basis.

OPERATING CONDITIONS SELECTION GUIDE		
Equipment Type	**Average**	**Severe**
Buckets: - Clamshell - Dragline	Working in gravels, silts, and sands at low impact freshwater environment	Working in rock, hard digging, high impact, or saltwater environment
Cranes, Truck Mounted: - Hydraulic - Mechanical	Lift less than rated capacity, intermittent duty.	Continuous lift near rated capacity, excessive swing, abrasive materials, sloped surfaces, and saltwater environment.
Cranes: - Mechanical Dragline, Lifting, or Clamshell - Crawler Mounted	Gravels, silts, pull, and lift less than rated capacity.	Highly abrasive materials, impact breakout, continuous load near rated capacity, and saltwater environment.
Generators	Working below rated capacity, good field conditions.	Working at or above rated capacity, poor field conditions, such as saltwater.
Graders, Motor	Haul road maintenance; road construction, ditching; loose fill spreading; landforming, landleveling; summer road maintenance with medium to heavy winter snow removal; and elevating grader use.	Maintenance of hard-packed roads with embedded rock; heavy fill spreading; ripping scarifying of asphalt or concrete; continuous high load factor; and high impact.

OPERATING CONDITIONS SELECTION GUIDE		
Equipment Type	**Average**	**Severe**
Hydraulic Excavators, Crawler Mounted	Mass excavation or trenching where machine digs all the time in natural bed clay soils; some traveling and steady, full throttle operation; and most log loading operations.	Continuous trenching or truck loading in rock or shot rock soils; large amount of travel over rough ground; machine continuously working on rock floor with constant high load factor and high impact; and saltwater environment.
Hydraulic Excavators, Wheel Mounted	Continuous digging in sandy clay/sandy gravel, site development, and lumber yard applications.	Continuous digging in rock/natural bed clay, high impact, using hammer, and working in forests or quarries.
Hydraulic Shovels, Crawler Mounted (nonelectric)	Continuous loading in well shot rock or fairly tight bank: dry floor, little impact, or sliding on undercarriage.	Continuous loading in poorly shot rock, virgin, or lightly blasted tight banks. Adverse underfoot conditions: rough floors, high impact sliding on undercarriage; and saltwater environment.
Land Clearing Equipment	Working in low impact conditions at or below rated capacity.	High impact conditions working at or above rated capacity.
Loaders, Belt (conveyors)	Working below rated capacity, with intermittent service.	Working at or above rated capacity with continuous service.
Loaders, Front End Crawler Type	Bank excavation, intermittent ripping, basement digging of natural bed clays, sands, silts, and gravels; some traveling; and steady full throttle operations.	Loading shot rock, cobbles, glacial till, and caliche; steel millwork; high density materials in standard bucket; continuous work on rock surfaces; large amount of ripping of tight rock materials; high impact conditions; and saltwater environment.
Loaders, Front End Wheel Type (does not include skid steer and tool carriers)	Continuous truck loading from stockpile; low to medium density materials in properly sized bucket; hopper charging in low to medium rolling resistance; loading from bank in good digging; and load and carry on poor surfaces and slight adverse grades.	Loading shot rock (large loaders); handling high density materials with counterweighted machine; steady loading from very tight banks; continuous work on rough or very soft surfaces; load and carry in hard digging; travel longer distances on poor surfaces with adverse grades and saltwater environment.
Loaders with Backhoe, Crawler Type and Wheel Type	Utility applications in medium to heavy soil; occasional use of constant flow implements and dig depths to 3.05 meters (10 feet).	Production applications or digging in rock; regular use of constant flow implements; and dig depths over 3.05 meters (10 feet).

OPERATING CONDITIONS SELECTION GUIDE		
Equipment Type	**Average**	**Severe**
Log Skidders	Continuous turning, steady skidding for medium distances with moderate decking. Good underfooting; dry floor with few stumps and gradual rolling terrain.	Continuous turning, steady skidding for long distances with frequent decking; poor underfoot conditions: wet floor, steep slopes, and numerous stumps; and saltwater environment.
Clamshell dredges < 5 cy, Amphibious Excavator	Gravel, silts, breakout force at less than capacity, freshwater conditions.	Rock, abrasive materials, load at rated capacity, saltwater conditions.
Boats: Skiffs Crew Work Survey Launches	Freshwater applications, light waves, and steady to light use.	Saltwater use, medium to high waves, heavy use.
Pipelayers	Typical pipelayer use in operating conditions ranging from very good to severe.	Continuous use in deep mud or water or on rock surfaces.
Rippers and Bank Slopers	Light Rock, medium breakout force required.	Hard rock, excessive wear due to high breakout force.
Scrapers: Self-Propelled Tractor Drawn Soil Stabilizers	Varying loading and haul road conditions; long and short hauls; adverse and favorable grades; some impact; and typical road-building use on a variety of jobs.	High impact conditions, such as loading ripped rock; overloading, continuous high total resistance conditions; and rough haul roads.
Tractors, Crawler (Dozer)	Production dozing in clays, sands, gravels, and talus rock. Push-loading scrapers, borrow pit ripping, most land clearing and skidding applications. Medium impact conditions. Production landfill work.	Heavy rock ripping; tandem ripping; pushloading and dozing in hard rock; work on rock surfaces; continuous high impact conditions; and saltwater environment.
Tractors, Wheel Type (Dozer)	Production dozing, push loading in clays, sands, silts, loose gravels; and shovel cleanup	Production in rock; push loading in rocky, boulder strewn borrow pits; high impact conditions; and landfill compactor work.
Trenchers, Chain and Wheel Type	Working in sands and silts below rated capacity of the machine.	Working in gravels and abrasive materials at or above the rated capacity of the machine.

OPERATING CONDITIONS SELECTION GUIDE		
Equipment Type	**Average**	**Severe**
Trucks: Trailers Highway	Varying loading and road conditions; and typical construction use on a variety of jobs	Consistently poor road conditions; and oversized loading equipment.
Trucks: Water Off-Highway (Articulated and Rigid)	Varying load and haul road conditions; high rolling resistance and poor traction during part of the job; some impact loads; and typical use in road building, dam construction, open-pit mining, etc.	Continuous use on very poorly maintained haul roads, high rolling resistance, and poor traction; frequent adverse grades and high impact loads; and poorly matched loading equipment with continuous overloading.
Wagons: Bottom Dump Rear Dump	Varying load and haul road conditions; long and short hauls; high rolling resistance and poor traction during part of the job; some adverse grades; some impact; typical road building use in a variety of jobs; and dam construction, open-pit mining, etc.	Continuous use on a very poorly maintained haul roads, high rolling resistance, and poor traction; high impact conditions, such as loading ripped rock; frequent adverse grades and high impact loads; and poorly matched loading equipment with continuous overloading.

Table E-6. Operating Conditions Selection Guide

APPENDIX F. PAINTING AND MARKING EXPEDITIONARY EQUIPMENT

F.1 PRESERVATION AND RUSTPROOFING MATERIALS

Appendix A of NAVFAC S6360-AW-MMO-010, Corrosion Prevention and Control Technical Manual, has more specific procedures and a detailed listing of corrosion preventive compounds applicable to expeditionary equipment.

F.2 CHEMICAL AGENT RESISTANT COATING (CARC) (for Expeditionary Equipment).

The CARC System is a combination of pretreatments, primers, and topcoats. After surface preparation and pretreatment, the equipment exteriors is painted with an epoxy primer, then with an aliphatic polyurethane topcoat. CARC is a toxic substance. Safety precautions must be observed while painting with CARC. Follow applicable Material Safety Data Sheets for each paint and solvent. In depth safety precautions can be found in TM 4750-OD/1.

F.3 Camouflage Painting of Expeditionary Equipment

a. Authorization for Camouflage. Authorization for camouflage painting of expeditionary equipment may only be granted by a cognizant Theater Commander or higher authority.

b. Camouflage Patterns. All expeditionary equipment required to be painted camouflage shall use the new 3-Color Camouflage Patterns (3-CCP). Use only printed design patterns in TM 4750-OD/, U.S. Marine Corps Camouflage Paint Patterns. The 3-CCP system analyzes the equipment to note geometric shapes, such as corners and side view mirrors, and spreads patches of paint over them, thus blending them. Camouflage colors are applied in patches and patterns determined by computer programs. Pattern replacement and the ratio of black to green and brown must be precise to afford maximum concealment.

c. 3-CCP System. The 3-CCP is a system of contrasting color bands and patches applied over the base color (Green 383) to disrupt the silhouette or outline of the equipment. These bands of color which break up the outline are keyed to equipment surface features such as door handle, door lock, or fender that are identifying features of that class or type of equipment.

d. Other than 3-CCP. Those equipment items that do not have a 3-CCP are to remain the base color (Green 383) unless otherwise directed by higher authority.

F.4 Locations of Markings. The following figures depict locations for where to place emblem, placards and other forms of markings on expeditionary equipment. Not all expeditionary equipment is depicted.

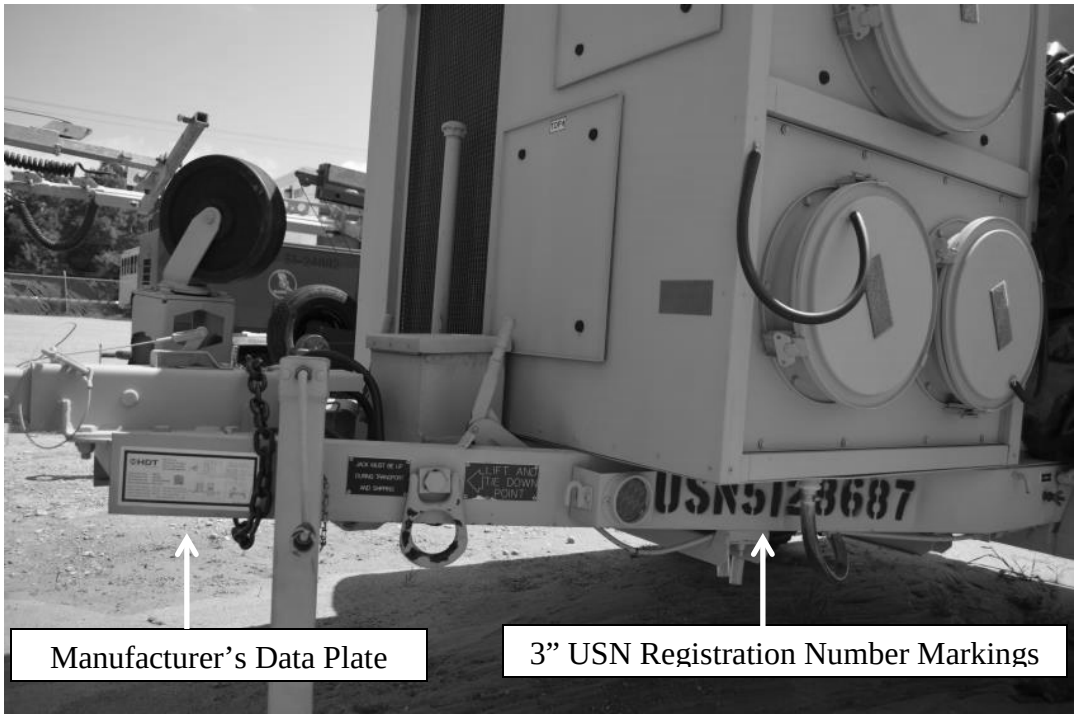

Figure F-1. Environmental Control Unit Trailer Mount

Figure F-2. Tractor Wheel Backhoe Loader

Figure F-3. Water Distributor MTVR

Figure F-4. SIXCON Fuel Tank

Figure F-5. Marking contrast due to shadowed location on the Flatbed

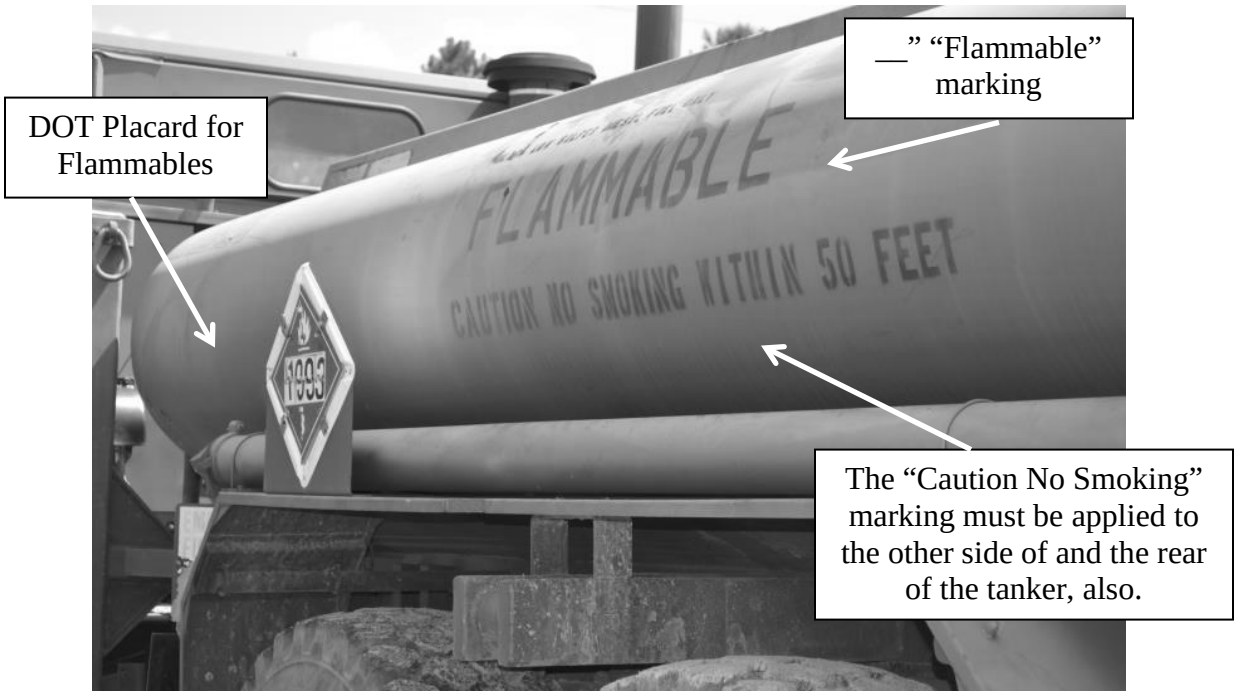

Figure F-6. Fuel Tanker

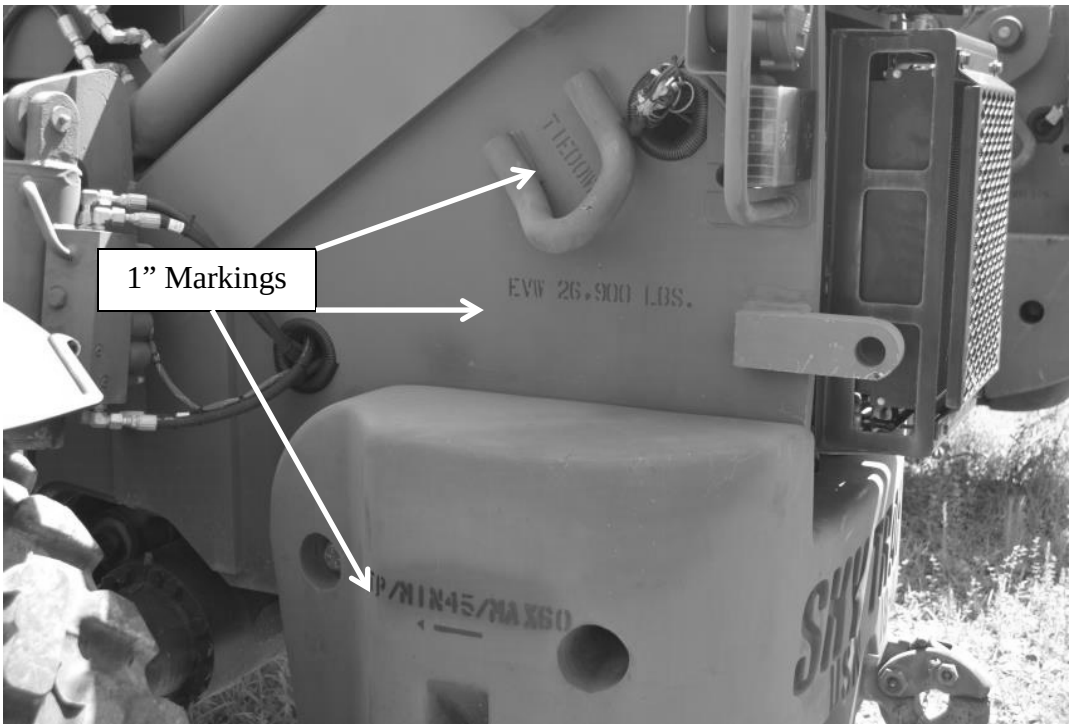

Figure F-7. Rough Terrain Forklift

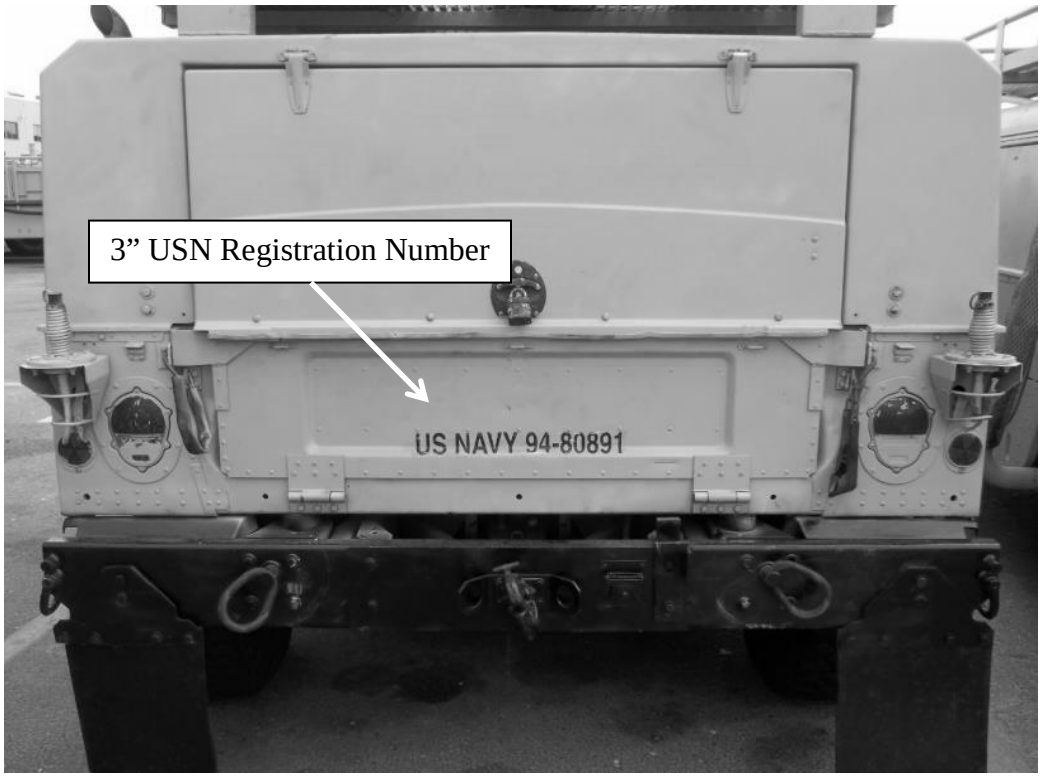

Figure F-8. HMMWV

Figure F-9. Lighter, Amphibious Resupply, Cargo, 5 ton (LARC V)

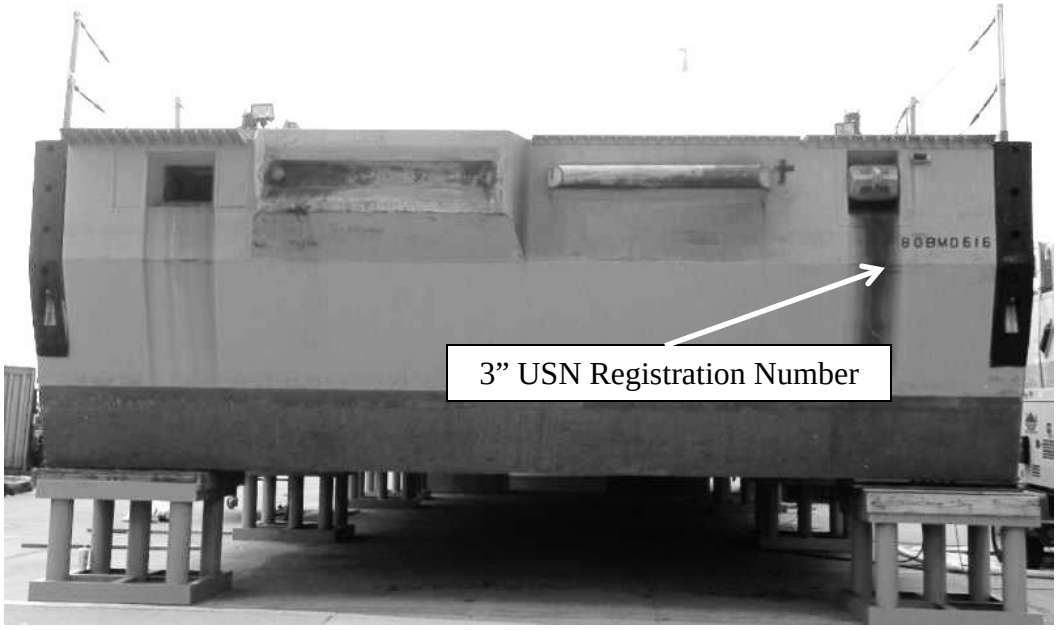

Figure F-10. Improved Navy Lighterage System