

**NOT MEASUREMENT
SENSITIVE**

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**DEPARTMENT OF DEFENSE
STANDARD PRACTICE
ORDNANCE ALTERATION (ORDALT) INSTRUCTIONS,
PREPARATION OF**



MIL-STD-1662D(OS)

FOREWORD

1. This standard is approved for use by the Naval Surface Warfare Center Indian Head Explosive Ordnance Disposal Technology Division (NSWCIEHODTD) and is available for use by all Departments and Agencies of the Department of Defense.

2. Ordnance Alteration (ORDALT) instructions provide naval activities with all of the information necessary to affect the alteration of naval ordnance weapons, weapon systems, computer programs, and equipment (expendable or non-expendable) that are either in service (shipboard or shore activities) in store or awaiting installation. These alterations include additions, deletions, rework or replacement of parts/assemblies/equipment, changes in material, and changes in the manner of assembly.

3. ORDALT instructions direct (or describe) configuration changes to equipment after delivery from production. ORDALT instruction numbers are also assigned to production-line changes to systems or equipment to identify differences from an established product baseline. Configuration status accounting of ORDALT applicability and accomplishment is based on accurate ORDALT instruction number identification and the revision, change, or issuance of a new ORDALT instruction in accordance with the provisions of this standard. ORDALT instruction numbers are assigned only to class I Engineering Change Proposals (ECP) that have been approved by the proper authority. Once issued, ORDALT instructions are subject to formal change control procedures and may not, under any circumstances, be revised or changed without the appropriate Configuration Control Board (CCB) authority.

4. ORDALT instructions are issued as Naval Sea Systems Command (NAVSEA) technical documentation. However, the preparer of the ORDALT instruction may be a NAVSEA Code, a NAVSEA supporting field activity, another service-managed activity so directed, or a contractor.

5. The figures appearing at the back of this standard are examples only. If there is any conflict between the text and the figures, the text applies.

6. Comments, suggestions, or questions on this document should be addressed to Commander, Naval Sea Systems Command, ATTN: SEA 05S, 1333 Isaac Hull Avenue, SE, Stop 5160, Washington Navy Yard D.C. 20376-5160 or emailed to CommandStandards@navy.mil, with the subject line "Document Comment". Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at <https://assist.dla.mil>.

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1. SCOPE

1.1 Scope. This standard establishes the format, content, and procedures for the preparation of ORDALT instructions. ORDALT instructions are prepared in either “short format” or “long format” (formerly referred to as “short form” or “long form”) (see 3.8.1 and 3.8.2).

2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3, 4, or 5 of this standard. This section does not include documents cited in other sections of this standard or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements of documents cited in sections 3, 4, or 5 of this standard, whether or not they are listed.

2.2 Government documents.

2.2.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

DEPARTMENT OF DEFENSE SPECIFICATIONS

- MIL-P-15024/10 - Nameplates, ORDALT Plates and Information Plates
- MIL-DTL-18307 - Nomenclature and Identification for Aeronautical Systems Including Joint Electronics Type Designated Systems and Associated Support Systems

DEPARTMENT OF DEFENSE STANDARDS

- MIL-STD-130 - Identification Marking of U.S. Military Property
- MIL-STD-196 - Joint Electronics Type Designation Automated System
- MIL-STD-1661 - MARK and MOD Nomenclature System
- MIL-STD-1686 - Electrostatic Discharge Control Program for Protection of Electrical and Electronic Parts, Assemblies and Equipment (Excluding Electrically Initiated Explosive Devices)
- DOD-STD-2101 - Classification of Characteristics
- MIL-STD-3034 - Reliability-Centered Maintenance (RCM) Process
- MIL-STD-38784 - General Style and Format Requirements for Technical Manuals

(Copies of these documents are available online at <https://quicksearch.dla.mil/>.)

2.2.2 Other Government documents, drawings, and publications. The following other Government documents, drawings, and publications form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

DEFENSE LOGISTICS AGENCY

- Cataloging Handbook H4/H8 - Commercial and Government Entity (CAGE) Codes

(Copies of this document are available online at www.dla.mil.)

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DEPARTMENT OF DEFENSE ISSUANCES

- DoD 5220.22-M - National Industrial Security Program Operating Manual
- DoDD 4715.1 - Environment, Safety, and Occupational Health (ESOH)
- DoDI 5230.24 - Distribution Statements on Technical Documents

(Copies of these documents are available online at www.esd.whs.mil/DD/.)

NAVAL SEA SYSTEMS COMMAND (NAVSEA) PUBLICATIONS

- SL720-AA-MAN-030 - Navy Modernization Process Management and Operations Manual (NMP-MOM)

(Copies of this document are available online at <http://www.nde.navy.mil>)

OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA)

- Occupational Safety and Health Act of 1970, Public Law 91-596

(Copies of this document are available online at www.osha.gov.)

OPNAV INSTRUCTIONS

- OPNAVINST 4790.4 - Ship's Maintenance and Material Management System Policy
- OPNAVINST 5400.45 - Standard Navy Distribution List

(Copies of these documents are available online at <https://www.secnav.navy.mil/doni/default.aspx>.)

SECNAV INSTRUCTIONS

- SECNAVINST 5510.36 - Department of the Navy Information Security Program

(Copies of this document are available online at <https://www.secnav.navy.mil/doni/default.aspx>.)

U.S. GOVERNMENT PUBLISHING OFFICE

- U.S. Government Publishing Office Style Manual

(Copies of this document are available online at <https://catalog.gpo.gov>.)

2.3 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents are those cited in the solicitation or contract.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

- ASME Y14.38 - Abbreviations and Acronyms for Use on Drawings and Related Documents
- ASME Y14.44 - Reference Designations for Electrical and Electronics Parts and Equipment

(Copies of these documents are available online at www.asme.org.)

IEEE

- IEEE 315 - Graphic Symbols for Electrical and Electronics Diagrams (Including Reference Designation Letters)
- IEEE 12207 - Systems and software engineering - Software life cycle processes

(Copies of these documents are available online at www.ieee.org.)

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IPC

IPC-T-50 - Terms and Definitions for Interconnecting and Packaging Electronic Circuits

(Copies of this document are available online at www.ipc.org.)

SAE INTERNATIONAL

SAE EIA-649 - Configuration Management Standard

(Copies of this document are available online at www.sae.org.)

2.4 Order of precedence. Unless otherwise noted herein or in the contract, in the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. DEFINITIONS

3.1 Abbreviations and acronyms. The abbreviations and acronyms used in this document are defined as follows:

ADP	Automatic Data Processing
AEL	Allowance Equipage List
AMT	Amalgamated Military/Technical Improvement Plan
APL	Allowance Parts List
ASME	American Society of Mechanical Engineers
BRF	Best Replacement Factors
CAGE	Commercial and Government Entity
CC	Classification of Characteristic
CCB	Configuration Control Board
COSAL	Coordinated Shipboard Allowance List
DID	Data Item Description
DoD	Department of Defense
EC	Engineering Change
ECP	Engineering Change Proposal
EIC	Equipment Identification Code
ESDS	Electrostatic Discharge Sensitive
FC	Field Change
FMP	Fleet Modernization Program
GPO	Government Printing Office
HCP	Hardness Critical Process
IEEE	Institute of Electrical and Electronic Engineers
IMA	Intermediate Maintenance Activity
ISEA	In-Service Engineering Agent
I&C	Installation and Checkout
JETDS	Joint Electronics Type Designation System (formerly known as the Joint Army-Navy Nomenclature System [AN System])
MAM	Maintenance Assistance Module
MARK	A NAVSEA type designation (not an acronym)

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MEC	Military Essentiality Code
MIP	Maintenance Index Page
MK	Abbreviation for MARK
MOD	Abbreviation for Modification
MRC	Maintenance Requirement Card
NAVSEA	Naval Sea Systems Command
NAVSEACEN	Naval Sea Support Center
NAVSEACENLANT	NAVSEACEN, Atlantic
NAVSEACENPAC	NAVSEACEN, Pacific
NCN	Navy Control Number
NDE	Navy Data Environment
NSN	National Stock Number
OADR	Originating Agency Determination Required
OD	Ordnance Data
OPNAV	Office of the Chief of Naval Operations
OPNAVINST	OPNAV Instruction
ORDALT	Ordnance Alteration
PL	Parts List
PMS	Planned Maintenance System
SCAT	Subcategory Code
SHIPALT	Ship Alteration
SIMA	Shore Intermediate Maintenance Activity
SM&R	Source, Maintenance and Recoverability
SNAP	Shipboard Non-tactical ADP Program
SNDL	Standard Navy Distribution List
SPETERL	Ships Portable Electric/Electronic Test Equipment Requirements List
SPM	Ship's Program Manager
TM	Technical Manual
TM&DE	Test, Measurement and Diagnostic Equipment
TRF	Technical Replacement Factor
TRS	Technical Repair Standard

3.2 Combat system. A functional grouping of all shipboard equipment and systems that are designed to detect, track, identify, communicate, process, evaluate, and control the engagement of enemy forces, either actively or passively. The combat system includes: command and control, missiles, guns, fire control, launchers, torpedoes, rockets, sensors, electronic warfare, communications, navigation, associated computer programs, and related offboard assets. The combat system is the totality of the warfighting capability of a surface ship.

3.3 Computer program (ordnance). A compilation or group of logic instructions given to and used by a computer to perform specific operations in resolving digital and analog input signals into values or orders necessary to employ or deploy weapons. Programs are normally contained on or provided via a transportable medium and are assigned nomenclature for identification as a part of a higher-level configuration item.

3.4 Field change (FC). Any modification or alteration made to electronic equipment after delivery to the Government and documented in accordance with SL720-AA-MAN-030.

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3.5 Latent defect. A defect that existed at the time of Government acceptance but could not be detected with existing inspection or test procedures.

3.6 Maintenance assistance module (MAM). A replaceable assembly (module) required to execute an approved maintenance plan. A MAM is used to isolate a fault to an assembly (or subassembly) having a unique application in a particular equipment. MAMs are not considered spare or repair parts except under specified emergency conditions.

3.7 ORDALT. A change to naval ordnance equipment or ordnance-associated computer programs. Equipment alterations include the addition, deletion, rework, or replacement of parts, assemblies, or equipment or changes in assembly procedures. Ordnance-associated computer program alterations include the incorporation of different computer program versions, approved modification, or corrections to both operational test and maintenance programs. An ORDALT is the result of an approved class I ECP prepared and processed in accordance with SAE EIA-649.

3.8 ORDALT instruction. A technical document that contains the detailed instructions, test procedures, provisioning information, support documentation, and other related information required to perform and support an ORDALT.

3.8.1 Short format ORDALT instruction. An instruction that covers an alteration that satisfies the following criteria:

- a. The alteration does not affect the spare parts allowance of the equipment involved,
- b. The alteration does not affect the weight and moment of the ship in which installed,
- c. The alteration does not require the accomplishment of an associated ship alteration (SHIPALT), and
- d. The alteration does not require the furnishing of an ORDALT kit of material for accomplishment.

3.8.2 Long format ORDALT instruction. An instruction that covers an alteration that satisfies one or more of the following criteria:

- a. The alteration may affect the spare parts allowance of the equipment involved,
- b. The alteration may affect the weight and moment of the ship in which installed,
- c. The alteration may require the accomplishment of an associated SHIPALT, or
- d. The alteration may require the furnishing of an ORDALT kit of material for accomplishment.

3.9 ORDALT kit. An assemblage of materials and documentation required to perform an alteration and to supply initial repair parts to provide onboard support. The kit for a computer program ORDALT consists of program tapes, discs, and ancillary materials required to perform a computer program modification or correction.

3.10 SHIPALT. Any change in the hull, machinery, equipment, or fittings that involves change in design, materials, number, location, or relationship of the component parts of an assembly.

3.11 Spares.

3.11.1 Installation and checkout spares. Parts used by the installing agent in accomplishment and checkout of an alteration.

3.11.2 Initial spares. Onboard repair parts acquired as part of the ORDALT kit that are used prior to full Navy supply support.

3.11.3 Interim spares. Repair parts provided and controlled by the technical manager to be used to augment initial spares prior to full Navy supply support.

3.11.4 Coordinated shipboard allowance list (COSAL) spares. Spares provided through the Navy Supply System to support COSAL.

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3.12 Survivability ORDALT. Any ORDALT that provides a system or equipment with the ability to sustain damage incurred by attack, shock, or other types of influence from outside activities, and remain operable. For example, alterations providing improved or new shock mounts, armor protection, protected cable ways, and solid-state components or upgraded material, whose requirement was identified specifically by a shock test or similar event apply.

4. GENERAL REQUIREMENTS

4.1 Recycled, recovered, environmentally preferable, or biobased materials. Recycled, recovered, environmentally preferable, or biobased materials should be used to the maximum extent possible, provided that the material meets or exceeds the operational and maintenance requirements, and promotes economically advantageous life cycle costs.

4.2 General. The ORDALT instruction(s) shall be prepared in accordance with the requirements specified herein. ORDALT instructions shall be prepared in either the short format or long format (see 3.8.1, 3.8.2, and 5.2), as specified in the contract or order (see 6.2). The ORDALT instruction shall clearly and accurately describe all essential contents, material, parts, support equipment, test equipment, installation instructions, test procedures, quality assurance provisions, personnel and facilities qualifications, provisioning information, support documentation, and other information required to perform and support the alteration (for examples, see figures 1 through 15). Support documentation includes Maintenance Index Pages (MIP) and Maintenance Requirement Cards (MRC) prepared in accordance with MIL-STD-3034 or system computer program documentation (version description documents, program listings, and other data) prepared in accordance with IEEE 12207.

4.3 Minor shipboard work. Minor shipboard work associated with the ORDALT shall be documented as specified in 5.2.13.1. The minor shipboard work incorporated in the ORDALT instruction shall be approved by NAVSEA's Ship's Program Manager (SPM) and shall be limited to the following:

- a. The work consists of picking up spare wires in existing cables or installing cables in existing wireways between two ordnance equipment cabinets or associated junction boxes in the same space.
- b. The work has no effect or only negligible effect on weight (fewer than 50 pounds) and moment.
- c. The work does not exceed existing electrical power, coolant, or air conditioning levels available in the work compartment.
- d. The work area is accessible without creating a special access.
- e. The work is within the accomplishment level of the Intermediate Maintenance Activity (IMA) and can be accomplished within 20 percent of total hours on the job.
- f. The work requires a minimum of support from additional work centers (welding, fabrication, insulation, painting, and other work processes).

4.4 Security classification. ORDALT instructions shall be unclassified whenever possible. If classified, the lowest security classification compatible with contents shall be assigned. The security classification of the ORDALT instruction shall be assigned by authority of the appropriate security classification guide source document, multiple sources, or a designated original classification authority. The security classification of ORDALT instructions shall be in accordance with the requirements of SECNAVINST 5510.36. When the ORDALT instruction is prepared by a Navy activity, the classification markings will be in accordance with SECNAVINST 5510.36. For ORDALT instructions prepared by contractors, the classification markings shall be in accordance with DoD 5220.22-M.

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4.4.1 Overall classification. The overall classification assigned to the ORDALT instruction shall be placed at the top and bottom of the title page (see 5.1.1). When this results in the title page being marked with a higher classification than that assigned to the contents of that page, an explanation of the higher classification shall be made beneath the bottom classification marking. For example:

CONFIDENTIAL
(This page is UNCLASSIFIED)

or

SECRET
(This page is CONFIDENTIAL)

The classification authority and declassification schedule shall be shown at the bottom center of the title page above the classification marking (see [figure 1](#)).

4.4.2 Classification of titles. The title of the ORDALT instruction shall be identified in accordance with SECNAVINST 5510.36 or DoD 5220.22-M, as applicable (see [figure 1](#)).

4.4.3 Classification of pages. Each page (other than the title page) shall be marked according to its highest content, and this classification marking shall be placed at the top and bottom of the page, except when the classification shall be placed on both pages (see [figure 4](#) and [figure 5](#)). A blank page, backing up a classified page, shall show the classification of the classified page. Unclassified sheets (both pages being unclassified) shall be so marked. If the classification shown on the last page of the ORDALT instruction is not the same as that shown on the title page, then a blank sheet shall be added to the back of the instruction which shows the same classification (excluding Restricted Data notations, if applicable) as on the title page. No text shall appear on the last page of the ORDALT instruction. A blank page shall be provided as the last page. Overall classification shall be marked at the top and bottom center of the page. When any page (except a blank page) is marked with a higher classification than that assigned to its contents, an explanation shall be made on that page beneath the bottom classification marking. For example:

CONFIDENTIAL
(This page is UNCLASSIFIED)

or

SECRET
(This page is CONFIDENTIAL)

4.4.4 Downgrading/declassification. As applicable, downgrading/declassification markings shall be applied in accordance with SECNAVINST 5510.36 or DoD 5220.22-M.

4.5 Distribution statements and export control warning notice. All classified and unclassified ORDALT instructions shall be marked in accordance with DoDI 5230.24 and as specified in 5.1.1.8 and 5.1.1.9.

4.6 ORDALT instruction identification. The ORDALT instruction identification shall be placed on each page at the upper right corner of the title page (see 5.1.1.2) and at the upper center of each successive page. This identification shall be composed of the symbol "ORDALT", followed by an identification number (Arabic numerals). The ORDALT identification number shall be assigned as specified (see 6.2). Revisions and supersessions to ORDALT instructions shall be designated as specified in 4.7.

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4.7 Correction of released ORDALT instructions.

4.7.1 Revisions. A revision shall be issued only when there are major changes to the technical portion of the text, with no change to the kit content, and when no separate report of completion is required. Revisions shall also be issued to correct any latent defects found under contract warranties. A revision shall be a completely new edition of an existing ORDALT instruction. Revisions shall be indicated by a capital Gothic letter immediately following the same identification number as the basic instruction. The first revision shall be marked with a letter "A", and the succeeding revisions shall be indicated by other letters in alphabetical sequence, except that the letters "I", "O", "Q", "S", "X", and "Z" shall not be used. A revision to an ORDALT instruction shall clearly bear the following legend beneath the title (see [figure 6](#)):

"NOT TO BE ACCOMPLISHED ON MATERIAL ON WHICH ORDALT (identify) HAS BEEN ACCOMPLISHED."

4.7.2 Supersessions. A new (superseding) ORDALT instruction shall be prepared in lieu of a revision whenever the physical material to be supplied in the new ORDALT kit is not completely interchangeable with the material supplied in the original kit and whenever the alteration of the equipment requires the submission of a new completion report. The new (superseding) ORDALT instruction shall not be prepared until after Government approval of a new ORDALT assignment via the engineering change process and assignment of the new ORDALT instruction number. A new (superseding) ORDALT instruction shall include a supersession legend (see 5.1.1.6) as follows:

a. If the new superseding ORDALT is required even though the original ORDALT installation has been accomplished, the new ORDALT instruction shall clearly bear the following legend beneath the title (see [figure 11](#)):

"SUPERSEDES ORDALT (identify). TO BE ACCOMPLISHED WHETHER OR NOT ORDALT (identify) HAS BEEN ACCOMPLISHED."

b. If the original superseded ORDALT has been performed and the accomplishment of the new ORDALT is not required, the new ORDALT shall clearly bear the following legend beneath the title (see [figure 12](#)):

"SUPERSEDES ORDALT (identify). NOT TO BE ACCOMPLISHED ON MATERIAL ON WHICH ORDALT (identify) HAS BEEN ACCOMPLISHED."

4.8 Proofing. The ORDALT instruction and kit and all its contents, including computer programs and related documentation, shall be subject to proofing as specified (see 6.2). Proofing will be performed to ascertain that the intended purpose of the alteration is satisfied and to identify any discrepancies. Proofing will determine whether immediate action must be initiated to correct discrepancies in the first-time alteration installation and in the alteration design package or related documentation to preclude a repeat of the same problems on subsequent installations.

4.9 ORDALT instruction approval. The ORDALT instruction shall be subject to approval as specified (see 6.2). Authentication of approved ORDALT instructions shall be as specified in 5.1.2.3.

5. DETAILED REQUIREMENTS

5.1 Front matter.

5.1.1 Title page. The ORDALT instruction title page shall be in accordance with the requirements specified in 5.1.1.1 through 5.1.1.12 (see figures [1](#), [2](#), [3](#), [6](#), [7](#), [10](#), [11](#), and [12](#)).

5.1.1.1 Security classification. The security classification markings shall be as specified in 4.4, 4.4.1, 4.4.2, and 4.4.4.

5.1.1.2 ORDALT instruction identification. The ORDALT instruction identification (including applicable revision indicator) shall be shown at the upper right corner of the title page. An upper rule (line) shall be placed across the page below the ORDALT instruction identification.

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5.1.1.3 Commercial and Government entity (CAGE) code identification. The NAVSEA design activity CAGE code identification “CAGE CODE 53711” shall be shown at the top left corner of the title page and above the upper rule opposite the ORDALT instruction identification.

5.1.1.4 Change identification. The change identification (see 4.7.1) shall appear below the ORDALT instruction identification and the upper rule (see [figure 6](#) and [figure 7](#)).

5.1.1.5 Heading and title. The heading “ORDALT INSTRUCTION” shall be centered above the title of the ORDALT instruction. The title shall completely identify the unit, equipment, and system (such as name and type designation, for example, MARK, modification [MOD], Joint Electronics Type Designation System [JETDS], or computer program identification) in accordance with the official nomenclature assigned to such items by NAVSEA (for example, nomenclature established in accordance with MIL-STD-1661, MIL-STD-196, or MIL-DTL-18307), as specified (see 6.2). The title shall be shown in all capital letters.

5.1.1.6 Change, revision, and supersession legends. The applicable change (see 4.7.1 and [figure 7](#)), revision (see 4.7.1 and [figure 10](#)), or supersession (see 4.7.2 and figures [11](#) and [12](#)) legend shall appear immediately below the title of the ORDALT instruction.

5.1.1.7 Command code. The command code shall be that of the NAVSEA program manager responsible for the system/equipment and shall appear below the title and applicable legends as specified (see 6.2).

5.1.1.8 Distribution statements. ORDALT instructions shall be marked with an appropriate distribution statement in accordance with DoDI 5230.24. The statement will be defined by applicable security classification guide for the system, a Contract Data Requirements Listing document, or other written guidance provided by the requestor or preparing agency (see 6.2).

The date applied to the distribution statement shall be the same as the effective date of the ORDALT instruction (see 5.1.1.11). The controlling office code shall be the same as specified for the command code (see 5.1.1.7).

5.1.1.9 Export control warning notice. All ORDALT instructions that contain export-controlled technical data shall be marked with the following notice (see 6.2):

“WARNING – This document contains technical data whose export is restricted by the Arms Export Control Act (Title 22, U.S.C., Sec 2751 et seq.) or the Export Administration Act of 1979 (Title 50, U.S.C., App. 2401 et seq.), as amended. Violations of these export laws are subject to severe criminal penalties. Disseminate in accordance with the provisions of DoD Directive 5230.25.”

5.1.1.10 Authority notice. The following authority notice, underlined by a lower rule placed across the page, shall be shown below the distribution statement and export control warning notice:

“PUBLISHED BY DIRECTION OF COMMANDER, NAVAL SEA SYSTEMS COMMAND”

5.1.1.11 Effective date. The effective date of the ORDALT instruction shall be the same as the date of Government authentication (see 5.1.2.3). The date shall appear immediately below the right end of the lower rule and shall be specified as day, month (all capital letters), and year.

5.1.1.12 Change or revision dates. The change date (see [figure 6](#) and [figure 7](#)) or revision date (see 4.7.1 and [figure 10](#)) shall be shown immediately under the effective date and preceded by “CHANGED” or “REVISED”, as applicable.

5.1.2 Signature page. The ORDALT instruction signature page shall be prepared in accordance with 5.1.2.1 through 5.1.2.3 (see [figure 13](#)).

5.1.2.1 Identification of preparer. The name and address of the Government activity or contractor who prepared the ORDALT instruction shall be entered under the heading “PREPARED BY”. ORDALT instructions delivered under contract shall also include, under this heading, the contract number and the name of any subcontractor who generated any part of such data.

5.1.2.2 In-service engineering agent (ISEA). The name and address of the cognizant ISEA shall be entered under the heading “IN-SERVICE ENGINEERING AGENT FOR THE WEAPON SYSTEM/EQUIPMENT”.

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5.1.2.3 Government authentication. The approved ORDALT instruction will be authenticated by entering under the heading “APPROVED FOR NAVSEA”, the signature, position, code, and effective date of signature of the official to whom responsibility for such authentication has been delegated to by NAVSEA. Authentication stamps or other substitutes for a signature should not be used.

5.1.3 Table of contents. ORDALT instructions that are complex in nature, contain many illustration or figures, or are 40 pages or more in length shall contain a table of contents. The single word “CONTENTS” in capital letters shall head the contents page. Identification numbers and headings for paragraphs and subparagraphs shall be shown in the listing. The contents also shall include figures, tables, and enclosures, if these are included. Page numbers shall be entered corresponding to each entry title. The table of contents shall be located after the signature page and before the text (see [figure 14](#)).

5.2 Primary paragraphs. The following primary paragraphs, numbered and titled as shown, shall be addressed in all ORDALT instructions, but shall be marked “NOT APPLICABLE” or “NONE”, as appropriate, when no data is required (see [figure 15](#)). For short-form ORDALT instructions, entries under primary paragraph headings 12, 15, and 16 shall always be marked “NONE” or “NOT APPLICABLE”.

ORDALT INSTRUCTION PRIMARY PARAGRAPHS

(Numbers in parentheses refer to applicable requirements paragraphs in this standard)

<u>Number</u>	<u>Title</u>
1.	DISTRIBUTION (5.2.1)
2.	SUBJECT (5.2.2)
3.	PURPOSE (5.2.3)
4.	AUTHORITY (5.2.4)
5.	APPLICATION (5.2.5)
6.	ORDALT ACCOMPLISHMENT KEYPOINT CHECK (5.2.6)
7.	ORDALT INSTALLATION PRIORITY LEVELS (5.2.7)
8.	ACCOMPLISHMENT LEVELS (5.2.8)
9.	MAN-HOURS REQUIRED (5.2.9)
10.	PARTS LIST AND DRAWING REFERENCES (5.2.10)
11.	ENCLOSURES (5.2.11)
12.	SUPPLY DATA (5.2.12)
13.	DETAILED INSTRUCTIONS (5.2.13)
14.	IDENTIFICATION (5.2.14)
15.	SHIPPING WEIGHT (5.2.15)
16.	WEIGHT AND MOMENT (5.2.16)
17.	UPDATING OPERATIONAL SUPPORT DOCUMENTATION (5.2.17)
18.	REPORT OF COMPLETION/LOG ENTRY (5.2.18)

5.2.1 ORDALT instruction paragraph 1 – DISTRIBUTION. A distribution list shall be included as part of the instruction, as specified (see 6.2). The listed activities shall be designated by the codes specified in OPNAVINST 5400.45. The date and number of the Standard Navy Distribution List (SNDL) used shall be included. The list shall also contain the SNDL codes for all shore stations designated in 5.2.5.3 and such force, type and other commands, repair ship and facilities, Government quality assurance representatives, and other distribution as may be appropriate (depending on the nature of the ORDALT) or as may be directed by NAVSEA. A footnote to the distribution list shall state the repository for obtaining the additional copies of the ORDALT instruction.

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5.2.2 ORDALT instruction paragraph 2 – SUBJECT. This paragraph shall identify the component, computer program, or other unit, and, as applicable, the next higher assembly and the system. Serial numbers shall be included for complete identification whenever a limited series of a particular equipment is to be altered by the specific ORDALT kit. Approved nomenclature, computer program identifiers, and system application accounting system with the configuration levels tracked by NAVSEA shall be used. The term “all MODS” shall not be used as part of the identification or description of the equipment (see 5.2.5.2).

5.2.3 ORDALT instruction paragraph 3 – PURPOSE. The text shall provide a clear and concise functional description of the alteration with explanations of the reasons and advantages. If a change is approved after the ORDALT instruction has been prepared, the purpose for the change shall be a part of the cover sheet in accordance with paragraph 4.7.1 (see [figure 9](#)). When an ORDALT instruction is revised, the purpose of the revision shall be explained under a subheading titled “Purpose of Revision”.

5.2.4 ORDALT instruction paragraph 4 – AUTHORITY. This paragraph shall list the NAVSEA CCB Directive number and date, each ECP involved in the ORDALT instruction, the ECP number, the applicable NAVSEA Navy Control Number (NCN), and the name of the ECP originator. A subparagraph shall be added to state authority for changes and revisions.

5.2.5 ORDALT instruction paragraph 5 – APPLICATION. A statement of dependence upon concurrent or prerequisite incorporation of other ORDALTs, SHIPALTs, FCs, and Engineering Changes (EC) shall be entered before the listing of application information. The use of the term “concurrent” shall indicate that it is mandatory for the listed alterations to be done at the same time. The use of the term “subsequent to” shall indicate it is mandatory that the subject ORDALT be done after the accomplishment of the listed alterations. Each ORDALT shall have a separate unique text. ORDALT instructions shall always indicate whether a concurrent or prerequisite ORDALT, SHIPALT, FC, or EC is required. For example:

“NOTE: The work required by this ORDALT Instruction shall be accomplished (concurrently with) (subsequent to) the accomplishment of ORDALT/SHIPALT/Field Change/Engineering Change (number and date).”

or

“NOTE: The work required by this ORDALT Instruction may be accomplished without dependency or concurrency with any other ORDALT, SHIPALT, Field Change, or Engineering Change.”

5.2.5.1 Test equipment for checkout. If any test equipment to be used for checkout after completion of the alteration requires modification by another ORDALT, FC, or EC, the test equipment requiring modification shall be listed, along with the modifying ORDALT/FC/EC numbers. If no data is required under this subheading, insert the word “NONE”.

5.2.5.2 Identity. The specific weapon, weapon system, computer program, or equipment to which the ORDALT instruction applies shall be identified by complete nomenclature and by MARK and MOD, JETDS, or other designation, as applicable. Each MOD shall be listed if more than one is covered. The phrase “ALL MODS” shall not be used. If ORDALTed equipment are not interchangeable with equipment not scheduled to receive the ORDALT, a new equipment identification shall be established for the altered equipment in accordance with MIL-STD-196 or MIL-STD-1661, as applicable. Serial numbers or ship/hull numbers shall be included. For example:

“This ORDALT Instruction is applicable to all Radar Sets AN/SPG-53F with serials 200 and lower, installed or in store. The equivalent of this ORDALT will be accomplished during production on equipment having serials higher than 200.”

or

“This ORDALT Instruction is applicable to Radar Set AN/SPG-52F, serial numbers 1-300.”

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5.2.5.3 Location or system. The applicability statement for ORDALT instructions that are applicable only to equipment installed in a specific location, ship class, or ship configuration should be stated similarly to the following examples:

“This ORDALT Instruction is applicable to the forward-most MK (number) MOD (number) gun mount or destroyers with hull numbers (list).”

or

“This ORDALT Instruction is applicable only to Computer MK 57 used with GFCS MK 68 MOD 4.”

or

“This ORDALT Instruction is applicable to Radar Set AN/SPG-53F on the following ships only:

CG-27 CG-28 CG-29”

5.2.6 ORDALT instruction paragraph 6 – ORDALT ACCOMPLISHMENT KEYPOINT CHECK. This paragraph shall include a complete ORDALT verification list that identifies physical and functional features of the equipment in sufficient detail to enable operating personnel to determine with certainty the accomplishment status of the ORDALT. Stamping of the ORDALT number on an ORDALT plate does not constitute an adequate keypoint check.

5.2.7 ORDALT instruction paragraph 7 – ORDALT INSTALLATION PRIORITY LEVELS. This paragraph shall contain a statement specifying the installation priority level(s) assigned to the ORDALT. The installation priority level(s) assigned shall be as specified (see 6.2).

5.2.7.1 Non-expendable ordnance equipment (including computer programs). For non-expendable ordnance equipment (including computer programs), the ORDALT instruction shall specify the ORDALT installation priority as it applies to each applicable ship class in accordance with the Fleet Modernization Program (FMP) Amalgamated Military/Technical Improvement Plan (AMT) or state that the ORDALT is a survivability ORDALT. Survivability ORDALTs (see 3.12) shall have an installation precedence over AMT priority levels 2 through 6. Installation priority levels will be assigned to ORDALTs applicable to installed equipment on operating ships, not to ORDALTs planned only to be installed under Shipbuilding and Conversion, Navy funding.

5.2.7.1.1 Survivability ORDALT. The survivability ORDALT shall be stated in the following manner:

“This ORDALT shall be accomplished as a Survivability ORDALT.”

5.2.7.2 Expendable ordnance equipment and associated portable test equipment. For expendable ordnance equipment and associated portable test equipment, the ORDALT instruction shall specify the ORDALT installation priorities as “EMERGENCY”, “URGENT”, or “ROUTINE”. Emergency priority ORDALT instructions shall specify that the work is to be accomplished without delay under the highest locally available work priority. Urgent priority ORDALT instructions shall specify that the work is to be accomplished without delay under the highest locally available work priority. Urgent priority ORDALT instructions shall specify that the work is to be accomplished as soon as practicable (but not to interfere with emergency priority ORDALTs for the same system or equipment). Routine priority ORDALT instructions shall specify that the work is to be accomplished as soon as practicable without interference with work of a higher priority.

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5.2.8 ORDALT instruction paragraph 8 – ACCOMPLISHMENT LEVELS. Accomplishment levels assignments shall be as specified (see 6.2). The levels will be assigned based on the skills required to accomplish the ORDALT. Level assignments will be made at the lowest level that can accomplish the installation. The following note (modified as appropriate) shall be included at the end of paragraph 8, after the accomplishment level(s) assignment:

“NOTE: For the convenience of the Government, this ORDALT may be accomplished by a higher accomplishment level activity than assigned by this ORDALT instruction. The higher accomplishment level activities are deemed to have the skills and equipment necessary to accomplish the change without the assistance or supervision from lower accomplishment level activities. In general, this ORDALT shall not be accomplished by a lower accomplishment level activity than assigned in this ORDALT instruction.”

5.2.8.1 Accomplishment level 1 (organization). Accomplishment level 1 shall be assigned to those ORDALTs approved for accomplishment by custodial (ship or shore activity) organizations. This level will normally be assigned to ORDALTs that service, adjust, or replace parts or minor assemblies or sub-assemblies and require fewer than 10 man-hours of work to accomplish.

5.2.8.2 Accomplishment level 2 (intermediate). Accomplishment level 2 shall be assigned to those ORDALTs approved for accomplishment by IMAs (for example, tenders, repair ships, and Shore Intermediate Maintenance Activities [SIMA]).

5.2.8.3 Accomplishment level 3 (depot). Accomplishment level 3 shall be assigned to those ORDALTs approved for accomplishment by shipyard (Navy or private), Navy shore-based depots or commercial activities (Designated Overhaul Points), Original Equipment Manufacturer (OEM), or to those ORDALTs planned for installation at the waterfront or during a ship’s availability that require skills of depot personnel skills (including manufacture of parts) not normally available at organizational and intermediate maintenance activities or shipyards personnel. ORDALTs accomplished at this level require skills and specialized equipment beyond the capabilities or organizational or intermediate maintenance activities.

5.2.9 ORDALT instruction paragraph 9 – MAN-HOURS REQUIRED. This paragraph shall provide total man-hours required for removal, alternation, reinstallation, and testing of the equipment affected by the alteration. Actual man-hours determined from experience or from trial installation shall be furnished whenever possible. Final texts shall reflect man-hour adjustments based on accomplishment of shipboard proof-in.

5.2.9.1 ORDALT installation milestone chart. When specified (see 6.2), an ORDALT installation milestone chart shall be included in the ORDALT instruction. The requirement shall be based on the following criteria:

- a. the complexity of the alteration,
- b. the number of trades involved in its accomplishment, and
- c. the number of man-hours required to accomplish the alteration.

The milestone chart shall be proved-in concurrently with all other ORDALT installations. A milestone shall consist of one action or a group of actions required to comprise a single function. Consideration shall be given to all supporting evolutions and not just installation time (see enclosure 11.1 of [figure 15](#)).

5.2.10 ORDALT instruction paragraph 10 – PARTS LIST (PL) AND DRAWING REFERENCES. The PL applicable to the ORDALT kit shall be listed first, followed by a tabulation by number of all drawings applicable to instructions specified in paragraph 13 of the ORDALT instruction. These documents shall be listed by NAVSEA or DoD identification numbers and the latest revision letters. Contractor’s numbers may be used when no NAVSEA or DoD numbers are available. All drawing numbers shall be preceded by the applicable CAGE code (see 5.2.12) in parentheses. All drawings and associated lists, or sheets thereof, that are deleted by the ORDALT from the set of drawings applicable to the specific equipment to which the ORDALT applies, shall be listed. Instructions for disposal, if necessary, shall be included. Information shall note whether the drawings are still applicable to other equipment in system or in related shipboard systems. In addition, all drawings that were revised in the set applicable to the specific equipment and any new drawings and lists that were generated to support the ORDALT shall be listed. Other documentation required for installation and checkout of the alteration shall be listed.

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5.2.10.1 Procedures. The following procedures shall be used to list drawing references. Each subheading shall be addressed. If no data is to be listed, the word “NONE” shall be inserted under the appropriate subheading (see [figure 15](#) for example):

“10. PARTS LIST AND DRAWING REFERENCES.”

“10.1 Microfilm Aperture Cards. Microfilm aperture card files shall be maintained by removing cards for superseded and deleted drawings and inserting cards for new and revised drawings. Microfilm aperture cards shall be ordered from (source)(location).”

“10.2 Required Drawings.” (Those identifying every part removed or altered by the ORDALT instruction. Those identifying all new equipment or detail parts needed for installation of the ORDALT or for assembly of the ORDALT kit. In the case of computer programs, such items are tapes, discs, file clips, etc. All others, such as assembly drawings or wiring and schematic diagrams, needed to accomplish installation and testing required by ORDALT instruction.)

“10.3 New/Revised Drawings.” (New and revised drawings required after accomplishment of the ORDALT, with complete identification of latest revision to revised drawings. This list shall state the source for obtaining.)

“10.4 Deleted Drawings.” (Obsolete drawings deleted by accomplishment of the ORDALT. This list shall state the disposition for deleted drawings.)

“10.5 Drawings and References for Information Only.”

“10.5.1 Drawings.”

“10.5.2 References.”

5.2.11 ORDALT instruction paragraph 11 – ENCLOSURES. This paragraph shall list any data supplied as enclosures to the ORDALT instruction. All enclosures shall be numbered consecutively in the order of their reference in or application to the text of the ORDALT instruction. The first enclosure shall be numbered 11.1, and the succeeding enclosures shall be numbered 11.2, 11.3, 11.4, and extended sequentially as necessary. The ORDALT instruction shall include the following enclosures in the order listed, as applicable:

- a. Enclosure 11.1: ORDALT Installation Milestone Chart (see 5.2.9.1).
- b. Enclosure 11.2: Copies of drawings, ordnance data (OD), version description documents, computer program listings, test specifications, service bulletins, and other data (see enclosure 11.2 of [figure 15](#)).
- c. Enclosure 11.3: A removable copy of paragraph 12.8 of the ORDALT instruction, allowance changes. This section of the text will be provided to the ship’s Supply Officer, to be attached to the ship’s COSAL, to provide interim Allowance Parts List (APL) and Allowance Equipage List (AEL) support (see 5.2.12.8).
- d. Enclosure 11.4: A removable copy of the ORDALT Installation Problem Reporting Statement (see 5.2.13).

5.2.12 ORDALT instruction paragraph 12 – SUPPLY DATA. For ORDALTs requiring supply items, this paragraph shall include the subheadings and information required by 5.2.12.1 through 5.2.12.8. When a part that is listed does not have a Government assigned/controlled drawing number, the manufacturer’s part numbers shall be listed. All part numbers shall be preceded with a CAGE code number in accordance with Cataloging Handbook H4/H8; for example, (06848) 13026-3 or (53711) 543210 or identified under separate column headings (see 5.2.12.2). If no information is required pertinent to any of the subheadings, the non-applicable subheading(s) shall be shown followed by the word “NONE”. For ORDALTs not requiring supply items, the word “NONE” shall be entered after the primary paragraph heading and the subheadings shall be omitted.

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5.2.12.1 Ordering data. Ordering data shall include the issuing authority (for example, the ISEA for those ORDALTs applicable to non-expendable ordnance) from whom the ORDALT kit must be ordered, the National Stock Number (NSN), if applicable, the PL number for the kit, and the number of packages. The ordering data shall also define the kit to unit relationship whenever one kit will contain sufficient material to modify more than a single configuration unit or more than one kit must be ordered to modify a single configuration unit. The disposition of Installation and Checkout (I&C) spares (see 5.2.12.2.1) shall be specified as part of the ordering data; for example:

“Those I&C spares not used during installation shall be provided to the ship’s supply department for retention by the ship.”

or

“Those I&C spares not used during installation shall be returned to the rotatable pool at NAVSEACENLANT/NAVSEACENPAC.”

5.2.12.2 Kit content. All material in a kit (for example, special tools, special test equipment, MAMs, test documentation for verification, COSAL repair parts, and two copies of the ORDALT text) shall be included in the kit. Technical manual (TM) changes, in preliminary or final form, shall be provided in the kit or as a separate numbered package to the kit. Classified changes shall not be in the kit. Each item in the kit shall be labeled to identify its item number, nomenclature, and part number. The item numbers shall correspond with the item numbers listed in paragraph 12.2 of the ORDALT instruction. The kit shall include special tools required to complete the ORDALT installation and to repair and maintain the equipment after completion of the ORDALT. The kit shall contain initial spares allowance for modified, substituted, or unique repair parts being added to the APL. These initial allowance items shall be designated by use of a double asterisk in both paragraph 12.2 and 12.8 of the ORDALT instruction. The Military Essentiality Code (MEC) and Source, Maintenance and Recoverability (SM&R) code shall be supplied for all applicable items included in the kit. Complete supply nomenclature and full instruction for establishing permanent COSAL allowance quantities shall also be included. Best replacement factors (BRF) or technical replacements factors (TRF) (such as failure rates based upon the number of expected failures per initial allowance items) shall be listed. Actual or estimated unit cost of the initial allowance item shall also be included. Information shall be supplied in tabular form using the following column headings:

<u>KIT ITEM</u> <u>NUMBER</u>	<u>NOMENCLATURE/</u> <u>DESCRIPTION</u>	<u>NATIONAL</u> <u>STOCK NO.</u>	<u>CAGE</u> <u>CODE</u>	<u>PART</u> <u>NO.</u>	<u>MEC</u>	<u>SM&R</u> <u>CODE</u>	<u>BRF/</u> <u>TRF</u>	<u>UNIT</u> <u>COST</u>	<u>ORDALT</u> <u>KIT QTY</u>
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5.2.12.2.1 Installation and checkout (I&C) spares. All I&C spares provided in the kit shall be listed in a subparagraph under 12.2. The I&C spares are consumable items to be used during installation of the alteration. At no time shall on-board repair parts be used as I&C spares (see 5.2.12.1). Information shall be supplied in tabular form using the following column headings:

<u>KIT ITEM</u> <u>NUMBER</u>	<u>NOMENCLATURE/</u> <u>DESCRIPTION</u>	<u>NATIONAL</u> <u>STOCK NO.</u>	<u>CAGE</u> <u>CODE</u>	<u>PART</u> <u>NO.</u>	<u>MEC</u>	<u>SM&R</u> <u>CODE</u>	<u>BRF/</u> <u>TRF</u>	<u>UNIT</u> <u>COST</u>	<u>ORDALT</u> <u>KIT QTY</u>
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5.2.12.3 Special materials, tools, or test equipment required for accomplishment, but not supplied in kit. A tabular listing of all special materials, tools, or test equipment required for accomplishment, but not supplied in the kit, shall be provided using the headings shown below. Common tools carried in the tool box need not be mentioned. Tabular listing shall be as follows:

<u>NOMENCLATURE/</u> <u>DESCRIPTION</u>	<u>NATIONAL</u> <u>STOCK NO.</u>	<u>CAGE</u> <u>CODE</u>	<u>PART/</u> <u>MODEL NO.</u>	<u>SM&R</u> <u>CODE</u>	<u>QUANTITY</u> <u>REQUIRED</u>	<u>STOCKING</u> <u>ACTIVITY/</u> <u>SOURCE</u>	<u>REMARKS</u>
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All parts or materials that are required to comply with the instruction but are not practical to include in the kit due to packaging, storing, shipping, or processing difficulty (for example, paint, abrasive paper, cement, oil, explosive rivets, soldering, or welding material) shall be listed. When listing parts or materials, such as sheet stock, overall dimensions (not the area) shall be indicated in the "QUANTITY REQUIRED" column. If material is to be used to alter more than one item, it shall be so stated. When an exact amount cannot be given, an estimate of volume per weapon or equipment shall be provided (for example, "approximately 1 pint"). The term "as required" shall be avoided. The "STOCKING ACTIVITY/SOURCE" column shall indicate where non-supplied items can be obtained. If parts from ship's stock are to be used, the "REMARKS" column shall indicate the number of those parts that should be ordered for replenishment (including spares).

5.2.12.4 Special tools, support equipment, and test equipment required after installation. The special tools, support equipment, and test equipment required for equipment operation or maintenance after ORDALT installation shall be listed in tabular form using the headings shown below. The Test, Measurement, and Diagnostic Equipment (TM&DE), including Special Purpose Electronic Test Equipment and General Purpose Electronic Test Equipment, MAMs, applicable Subcategory (SCAT) code, and related ancillary equipment and accessories, shall be included. Any advice or instructions regarding changes in the Ship's Portable Electrical/Electronic Test Equipment Requirement List (SPETERL) shall be entered in the "REMARKS" column to reflect the additional or changed TM&DE and any special conditions or application. Specific instructions for adjustment of ship's COSAL shall also be included under "REMARKS" to reflect such additional special tools, test equipment, MAMs, or support equipment. Tabular headings shall be as follows:

<u>NOMENCLATURE/ DESCRIPTION</u>	<u>NATIONAL STOCK NO.</u>	<u>CAGE CODE</u>	<u>PART/ MODEL NO.</u>	<u>SCAT CODE</u>	<u>QUANTITY REQUIRED</u>	<u>STOCKING ACTIVITY/ SOURCE</u>	<u>REMARKS</u>
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5.2.12.5 Disposition of removed materials/parts/units. All parts, units, or materials that are removed from installed or spare equipment and are not reinstalled during or after the modification shall be listed. Quantity, part number, nomenclature, NSN, and disposition code shall be indicated. Parts removed for rework and subsequent reinstallation or for use as spares, regardless of where the rework is to be performed, shall also be included. Any unusual conditions associated with the removal of parts, units, or materials shall be explained. Removed parts, units, and materials shall be listed under columnar headings as follows:

<u>NOMENCLATURE/ DESCRIPTION</u>	<u>*NATIONAL STOCK NO.</u>	<u>CAGE CODE</u>	<u>PART NO.</u>	<u>QUANTITY REMOVED</u>	<u>DISPOSITION CODE</u>
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(*Non-stock numbered items removed and designated for scrap shall not be stock-numbered.) If no parts are removed by the alteration, the word "None" shall be entered after the subhead title and the columnar headings omitted. The following standard disposition code numbers and their explanations shall be used (include only those applicable in numerical sequence):

<u>Code</u>	<u>Explanation</u>
1.	Disposition of replaced material is at discretion of Commanding Officer
2.	Scrap
3.	Rework in accordance with detailed instructions
4.	Return to stock if repairable or serviceable
5.	Use until stock is exhausted
6.	Return item to contractor
7.	(Use additional explanations as necessary)

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5.2.12.6 Alteration of spare assemblies/equipment.

5.2.12.6.1 Assemblies/equipment in stock. The spare assemblies, equipment, or MAMs (ship, tender, or Navy supply system) to which the ORDALT will be applicable shall be furnished under columnar headings as follows:

<u>NOMENCLATURE/ DESCRIPTION</u>	<u>NATIONAL STOCK NO.</u>	<u>CAGE CODE</u>	<u>PART/ *MODEL NO.</u>	<u>*CONTROL NUMBER</u>	<u>*SERIAL NUMBER</u>	<u>LOCATION OF SPARES</u>
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(*Omit these columns if not necessary.)

On-board spares shall be returned, as directed, to stock or to the manufacturer to be modified or reworked. If no modification of spares is required, the word "None" shall be entered after the subheading title and the columnar headings omitted.

5.2.12.6.2 Parts/materials required to modify spares. The parts or materials required to accomplish the ORDALT in spare assemblies, equipment, and MAMs shall be specified using the same column headings and arrangement as specified in 5.2.12.2. Introductory statements preceding these listings may be modified as necessary. When the parts or material required to modify spares are the same as those listed in 5.2.12.2 or 5.2.12.3, a statement so indicating may be used instead of repeating the listing. If neither parts nor materials are required, the word "NONE" shall be entered after the subheading title.

5.2.12.7 New, modified, or additional spare parts. If on-board spare assemblies are not to be altered concurrent with the system/equipment, new or modified spare assemblies shall be supplied with the ORDALT kit. The spare assemblies that are to be supplied shall be identified in tabular form as follows:

<u>KIT ITEM NO.</u>	<u>NOMENCLATURE/ DESCRIPTION</u>	<u>NATIONAL STOCK NO.</u>	<u>CAGE CODE</u>	<u>PART NUMBER</u>	<u>QUANTITY</u>
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If no new or modified spare assemblies are required in support of the altered equipment, the word "NONE" shall be entered after the subheading and the columnar headings omitted.

5.2.12.8 Allowance changes. Items that will be added to or deleted from the COSAL as a result of the equipment alteration shall be listed (note that parts population can change without affecting the allowance quantity). These lists also shall be included as an enclosure to the ORDALT instruction so they can be removed and attached to the affected APL or AEL as the ORDALT APL/AEL (see enclosure 11.3 of [figure 15](#)). Repair parts or spares furnished with the ORDALT kit as initial allowance items shall be designated by a double asterisk (**) (see 5.2.12.2) and so explained in a footnote. Reference symbols and designators for electrical and electronic parts and assemblies shall be as marked on the equipment in accordance with ASME Y14.44. They shall be as specified in the APL listing to identify non-interchangeable items that are part of the repair PL. Reference designators are assigned to items under the following conditions:

- a. Item is critical to configuration item operation.
- b. Serialization is required.
- c. Individual identity and accountability are required.
- d. Item is of unique or original design.
- e. Item is repairable.

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Lists shall be prepared in reference designation order and sequence and those items without reference designations shall be in part number sequence. This subparagraph (5.2.12.8) shall include the subheadings and information required by 5.2.12.8.1 through 5.2.12.8.4. If no information is required pertinent to any of the subheadings, the non-applicable subheading(s) shall be shown followed by the word "NONE" and the column headings omitted. One of the following notes, as indicated, shall be included under the subparagraph heading for 5.2.12.8.1.

- a. If the ORDALT does not affect the allowances, the following note shall apply:
"NOTE: ORDALT APL (identify) is assigned for configuration management purposes only."
- b. If the ORDALT does affect the allowances, the following note (modified as appropriate) shall apply:
"NOTE: The item(s) listed in paragraph 5.2.12.8.1 and 5.2.12.8.2 will appear on ORDALT APL (identify) and ORDALT AEL (identify) as add item(s). The item(s) listed in paragraphs 5.2.12.8.3 and 5.2.12.8.4 will appear on the ORDALT APL (identify) and ORDALT AEL (identify) as delete item(s). After the ORDALT is accomplished on all applicable equipment, the item(s) in paragraph 5.2.12.8.1 will be added to the equipment parent APL (identify), and the item(s) in paragraph 5.2.12.8.3 will be deleted from the equipment parent APL. The item(s) in paragraph 5.2.12.8.2 will be added to the equipment parent AEL (identify), the item(s) in paragraph 5.2.12.8.4 will be deleted from the equipment parent AEL."

5.2.12.8.1 Allowance parts list parts addition/allowance increase. The items/quantities to be added to the present APL after equipment is altered shall be identified in tabular form as follows:

APL (identify)

<u>REFERENCE DESIGNATION</u>	<u>CAGE CODE/PART NO.</u>	<u>NOMCLATURE/ DESCRIPTION</u>	<u>NATIONAL STOCK NO.</u>	<u>SM&R CODE</u>	<u>PARTS POPULATION ADDED</u>	<u>ALLOWANCE QUANTITY INCREASE</u>
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5.2.12.8.2 Allowance equipage list parts addition/allowance increase. The items/quantities to be added to the present AEL after the equipment is altered shall be identified in tabular form as follows:

AEL (identify)

<u>REFERENCE DESIGNATION</u>	<u>CAGE CODE/PART NO.</u>	<u>NOMCLATURE/ DESCRIPTION</u>	<u>NATIONAL STOCK NO.</u>	<u>SM&R CODE</u>	<u>ALLOWANCE QUANTITY INCREASE</u>
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5.2.12.8.3 APL deletion/allowance decrease. The items/quantities to be deleted from the present APL after the equipment is altered shall be identified in tabular form as follows:

APL (identify)

<u>REFERENCE DESIGNATION</u>	<u>CAGE CODE/PART NO.</u>	<u>NOMCLATURE/ DESCRIPTION</u>	<u>NATIONAL STOCK NO.</u>	<u>PARTS POPULATION DELETED</u>	<u>ALLOWANCE QUANTITY DECREASE</u>
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5.2.12.8.4 AEL parts deletion/allowance decrease. The items/quantities to be deleted from the present AEL after the equipment is altered shall be identified in tabular form as follows:

AEL (identify)

<u>REFERENCE DESIGNATION</u>	<u>CAGE CODE/PART NO.</u>	<u>NOMCLATURE/ DESCRIPTION</u>	<u>NATIONAL STOCK NO.</u>	<u>PARTS POPULATION DELETED</u>	<u>ALLOWANCE QUANTITY DECREASE</u>
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5.2.13 ORDALT instruction paragraph 13 – DETAILED INSTRUCTIONS. This paragraph shall cover in detail (as necessary) the disassembly, alterations, reassembly, tests, quality assurance provisions, precautions, and markings required for accomplishing the ORDALT. The instructions shall provide chronological step-by-step procedures for accomplishing the alterations of the equipment, weapon, weapon system, or system computer program and the necessary alterations to spares and replacement units. Detailed instructions shall be supported by illustrations, as necessary, to supplement engineering drawings. Alterations, accomplishment of major operations in proper sequence, and installation tools in use shall be shown in the illustrations (see 5.3.2). Special precautions shall be specified as required herein (see 5.3.6.6 through 5.3.6.6.4).

NOTE: When problems are encountered in accomplishing this ORDALT, the preaddressed ORDALT Installation Problem Reporting Statement, (identify enclosure), shall be completed and mailed.”

5.2.13.1 Minor shipboard work. When applicable (see 4.3), instructions for accomplishing minor shipboard work in support of the ORDALT shall be incorporated in subparagraph 5.2.13.1 under the subheading “Minor Shipboard Work”. Instructions for reporting completion of minor shipboard work shall be included in the ORDALT instruction as specified in 5.2.18.3 of this standard.

5.2.13.2 Markings and plates. Detailed instructions shall be specified for the placing of identification markings, nameplates, information plates, and ORDALT plates on the equipment in accordance with MIL-STD-130 and MIL-P-15024/10. This shall be in addition to the reidentification required by 5.2.14. Mounting and location of plates shall be as specified in 5.2.13.2.1.

5.2.13.2.1 Mounting and location of plates. Nameplates and information plates shall be mounted in a conspicuous place, generally on the front of the item. ORDALT plates shall be located as near as possible to the nameplates. A system or set nameplate shall be mounted on the principal or most prominent item of the major assembly. Plates shall be located in easily accessible places during operation. The mounting and location of the plates shall be shown on the assembly drawing of the item. Plates shall not be positioned so as to interfere with controls or obscure other required information. The mounting and location of plates shall not have an adverse effect on the strength of the item on which the plate is mounted. Plates shall not be mounted by means of rivets, self-tapping screws, or welds.

5.2.13.3 Local stock and sources. The use of local stock or the requirement for local manufacture of parts shall be specified only when such procedure is considered practicable to expedite incorporation of the ORDALT and when prior approval has been obtained from the contracting activity for the ORDALT kit.

5.2.13.4 Required tests. As necessary, tests shall be specified to verify installation and operation of the affected parts and systems. If practicable, preinstallation tests shall be specified as applicable to determine the operational status of the equipment prior to ORDALT installation. The ORDALT instruction shall require the necessary maintenance and repair procedures. When the ORDALT changes systems or circuits, the changes shall be explained. New procedures for system or circuit operation and tests shall be outlined. When ORDALTed equipment has multi-system application and different test procedures apply to each system, the test requirements shall be grouped and properly categorized by system application. If the test portion of the text is voluminous or classified, it may be prepared as a separate enclosure to the ORDALT instruction.

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5.2.13.5 Quality assurance provisions.

5.2.13.5.1 In-process and final inspections. The ORDALT work procedures shall identify the specific inspections that must be performed and the recommended process points for their performance. Changes to the sequence and locations of the inspections is allowable provided that all the inspections are performed and no safety provisions are violated.

5.2.13.5.2 Classification of characteristics (CC). ORDALT installation procedures shall be classified in accordance with DOD-STD-2101. Inspection and verification of compliance with the procedures shall be in accordance with defined classification of characteristics established in accordance with DOD-STD-2101. All defective characteristics shall be rejected. The use of sampling inspection requirements for verifying quality characteristics shall be as specified (see 6.2).

5.2.14 ORDALT instruction paragraph 14 – IDENTIFICATION. The method of marking or reidentifying equipment, including stamping the ORDALT number on the ORDALT plate, shall be indicated (see 5.2.13.2 for method of marking). The ORDALT number and the original basic serial number shall be stamped on the ORDALT plate to be affixed to each equipment having a nameplate and requiring reidentification as a result of the ORDALT accomplishment. When the model or part number is affected, the information shall be shown under columnar headings as follows:

<u>PREVIOUS IDENTITY</u>	<u>NOUN NAME</u>	<u>NEW IDENTITY</u>
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When a new equipment MARK, MOD, or Army-Navy (AN) designation is assigned following ORDALT accomplishment, a new configuration baseline shall be established for that equipment. All ORDALTs applicable to the previous MARK, MOD, or AN designation shall be made prerequisites of or concurrent to the reidentification ORDALT or be carried over and made applicable to the new equipment designation. Prerequisite and concurrent ORDALTs shall be deleted from the ORDALT plates. Carryover ORDALTs shall be retained on the plates if previously accomplished or stamped on the plate at time of accomplishment. The reidentification/markings procedure shall be clearly outlined to ensure correct identification of the new equipment baseline.

5.2.15 ORDALT instruction paragraph 15 – SHIPPING WEIGHT. The number of packages, shipping weight per package, and the total shipping weight and volume of the ORDALT kit shall be provided and expressed in pounds (or kilograms) and cubic feet (or meters).

5.2.16 ORDALT instruction paragraph 16 – WEIGHT AND MOMENT. An estimate of the final increase or decrease in the weight and shift in center of gravity of the altered equipment shall be included using one of the following statements:

“No significant weight and moment change results from ORDALT, and compensation is not required.”

or

“The resultant weight increase (decrease) has been recorded in the Naval Sea Systems Command weight records, and no specific compensation is required for accomplishment of this ORDALT.”

or

“Compensation is mandatory and is being covered by separate Naval Sea Systems Command action (SHIPALT).”

Or

If not shipboard equipment, enter “Not Applicable.”

For the short format ORDALT instruction, use either the first or last statement above, as appropriate.

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5.2.17 ORDALT instruction paragraph 17 – UPDATING OPERATIONAL SUPPORT DOCUMENTATION. All publications and Fleet support documentation affected by the ORDALT (including existing technical documentation, MRCs, APLs, and other data) shall be identified. TMs shall be listed with their associated stock numbers. The list shall be in the following sequence (see [figure 15](#)):

- a. TMs, including equipment or weapon system TMs and Combat System Technical Operations Manuals.
- b. MIPs.
- c. MRCs.
- d. Unscheduled MRCs.
- e. APLs and AELs.
- f. Equipment Identification Codes (EIC). NOTE: For system computer program ORDALTs, use EIC for parent hardware.
- g. ORDALT, FC, EC, or SHIPALT instructions.
- h. Technical Repair Standards (TRS).
- i. Other data (NAVSEA OD, weapon data).
- j. Version description document and other computer program data.

5.2.17.1 Documentation identification. TMs that will support the equipment as altered shall be identified by publication number, volume, title, and revision or change status. The change status may include Advance Change Notices prepared and issued in response to emergency needs prior to permanent changes and revisions, MIPs, and MRCs shall be identified by control number and title. APLs shall include the ORDALT APL number and all applicable parent APL numbers.

5.2.17.2 Procedure. If no documents are affected, the word “NONE” shall be entered after the feature heading. If any of the publication subheadings (such as TMs, MRCs, or others) are not affected by the ORDALT, the word “NONE” shall be inserted after the appropriate subheading.

5.2.17.3 Documentation changes source. The following statement shall be used as paragraph 17.2 of all instructions:

“17.2 Documentation changes source.

17.2.1 Technical manual changes or revision (final or preliminary) are provided in or along with the ORDALT kit. Classified changes shall not be shipped in the kit but shall be handled in accordance with DoD 5220.22-M. Additional copies of changes may be obtained from the Naval Publications and Forms Center (NPFC), Philadelphia, PA 19120-5099. MIPs and MRCs will be provided by the Naval Sea Support Center when the ORDALT is installed. Automatic distribution of other maintenance documentation such as APLs/AELs, COSAL, SPETERLs, will be accomplished by submission of OPNAV 4790/CK as set forth in paragraph 18. Material shall not be inserted into the manual or card deck until the ORDALT is accomplished.”

5.2.18 ORDALT instruction paragraph 18 – REPORT OF COMPLETION OR LOG ENTRY. Each ORDALT instruction shall include a statement delineating the report of completion or log entry requirements.

5.2.18.1 Non-expendable ordnance equipment (including computer programs). Text shall direct that accomplishment of an ORDALT shall be reported by the ORDALT installer to the appropriate ISEA and by submission of the Ship’s Configuration Change Form/OPNAV 4790/CK to the Maintenance Data Collection System in accordance with OPNAVINST 4790.4. Accomplishment shall be reported by entry into the configuration change screen display if the activity is using a Shipboard Non-tactical Automatic Data Processing (ADP) Program (SNAP) computer. All EIC numbers that will be used for ORDALT accomplishment shall be listed. This cross reference is required to highlight the use of the parent system EIC when reporting computer program alterations.

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5.2.18.2 Expendable ordnance equipment. Text shall direct that accomplishment of an ORDALT shall be recorded in the prescribed log or record book, such as Torpedo Record Book or Guided Missile Record Book. The activities (including the ISEA and the Inventory Control Point to whom a report of accomplishment will be submitted) shall be indicated. Specific details to be reported shall be included.

5.2.18.3 Minor shipboard work in support of an ORDALT. The text shall direct that completion data, such as marked-up drawings or modified wiring diagram for updating Ship's Selected Records shall be forwarded by letter to the appropriate planning yard, with a copy to the NAVSEA SPM.

5.3 Copy preparation requirements. The ORDALT instruction shall be prepared as specified in paragraphs 5.3.1 through 5.3.6.6.4.

5.3.1 Copy preparation methods. Unless otherwise specified (see 6.2), the methods of preparation shall be as specified herein. Equipment used for preparing the instructions and marginal copy shall be adequate for the purpose intended and shall provide clearly legible, easily usable publications at the most economical cost, considering both initial preparation and follow-on costs such as reproduction, handling, filing, storing, and shipping. The page elements not imprinted on the page, including corrections, shall be fastened to the page in a manner that will permit repeated handling of the copy over a period of years without the possibility of losing stripped-in portions. Minimum acceptable material shall have the following features:

- a. Single spacing.
- b. Unjustified right margins.
- c. Margins of not less than 1 inch (sides, top, and bottom).
- d. Page size of 8½ by 11 inches.
- e. Headings prepared on the same composing equipment as the text.

5.3.2 Illustrations. Illustrations shall be either in the form of line drawings (orthographic or perspective), continuous-tone original art, or glossy photographic prints (unscreened) intended for half-tone reproduction.

5.3.2.1 Location. Illustrations and tables shall be located as close to the related text as possible or as enclosures to the ORDALT text, whichever is deemed most advantageous for clarity. Illustrations less than page sized may be grouped and presented on a single page with a figure number and title assigned to each illustration. Group illustrations, with one figure number and title and separate subtitles, are particularly suitable for illustrating sequential operations.

5.3.2.2 Figure numbers and titles. Illustrations shall be identified by a figure number and title. Figure numbers shall be assigned consecutive Arabic numerals. Figure numbers and titles shall be typed as part of the text, not a part of the illustration. Illustrations requiring more than one page shall be identified in the following manner:

Figure _____ Installation Drawing (Sheet 1 of 2)

Figure _____ Installation Drawing (Sheet 2 of 2)

5.3.2.3 Nomenclature in illustrations. Significant features or components of illustrations shall be identified by index numbers or brief nomenclature. When exploded-view drawings involve relatively few parts, the nomenclature for each part shall be used. When many parts are involved, the parts shall be numbered (preferably clockwise) starting at the upper left and a key list added to show the nomenclature of each numbered part. Nomenclature of parts on illustrations shall be consistent with that in the text.

5.3.2.4 Diagrams. Component parts of wiring and schematic diagrams shall be symbolized in accordance with IEEE 315 and IPC-T-50. Reference designations shall be in accordance with ASME Y14.44. Wiring and schematic diagrams shall be planned and arranged for page-size presentation, whenever possible. Foldout pages should be limited to two-page foldouts. In no case shall they exceed an overall length of 45 inches from the binding edge, with a maximum printing area of 43½ inches long by 10 inches high.

5.3.2.5 Size considerations. When an illustration is of such size that it cannot be legibly reproduced within the maximum single-page printing area, it may be arranged for reproduction as a foldout. Illustrations requiring more than one foldout shall be adequately identified at the breaking points to assist the reader in making the crossover.

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5.3.3 Page numbering. The first or title page shall not be numbered. The signature page shall be lower case Roman numeral (ii). The contents pages shall be lower case Roman numerals starting with “iii”. The text pages following the signature page and content pages shall be numbered with consecutive Arabic numerals commencing with page “1”. Page numbers shall be placed at the bottom center of each page.

5.3.4 Paragraph headings and numbering. Primary paragraph headings and numbers shall be as shown in 5.2. The primary headings shall stand alone (not in with text) and shall appear in capital letters. Subparagraph headings shall be in accordance with the applicable content and as specified in 5.2 through 5.2.18.3. Except for prepositions, conjunctions, and articles, the first letter of each word in the subheading shall be capitalized. Subheadings shall be either underlined, italicized, or bold type. Each subparagraph shall be numbered consecutively within each primary paragraph of the ORDALT instruction, using a period to separate the number representing each breakdown. Itemization within a subparagraph may be identified by lowercase letters, followed by a period to avoid confusion with paragraph numbers (see [figure 15](#)).

5.3.5 References.

5.3.5.1 Nomenclature and part numbers. Reference to items (at all levels of breakdown) shall be by both nomenclature and part number (for example, “sleeve retainer 5509550”). Dashed numbers from part drawings shall be used for specificity when referring to parts in text. Complete nomenclature of equipment, computer program, or material shall be used for identification.

5.3.5.2 ORDALT kit item references. When referring to components of the ORDALT kit, the item number (see 5.2.12.2) shall be used as a parenthetical suffix to the part number reference (for example, “5509550 (kit item 2)”).

5.3.5.3 Control references. When referring to a control, the nameplate portion of the control’s description shall be capitalized (for example, “POWER ON/OFF switch” or “DAMPER CONTROL”).

5.3.5.4 Specification requirements. When Government specification numbers are referenced, the basic number shall be listed without the revision letter suffix, unless it is essential to include the suffix because of major differences in the revised specification. References to specifications shall be made similarly to the following examples: “MIL-C-5020” or “WW-B-626”.

5.3.5.5 Material references. Materials necessary to accomplish the ORDALT (for example, lubricants, sealing materials, or abrasives) shall be identified by reference to applicable specifications and standards. The applicable type, grade, class, or condition shall be indicated. When materials that cannot be identified adequately by references as indicated above are required, additional information for complete identification shall be provided and shall include the following:

- a. Trade name(s) or commercial designations.
- b. Name and address of the producer of materials or the producer’s CAGE code.
- c. Chemical composition (where applicable).
- d. Physical and mechanical properties in enough detail to disclose strength and safety characteristics when required by design.
- e. Dielectric properties for electrical insulating materials.

5.3.5.6 Text cross-references. When referring to text matter placed elsewhere in the instruction, reference shall be only to the paragraph number and not to the page number. The word “paragraph” shall not appear (for example, “listed in 17.1.4”).

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5.3.5.7 Figure references. References shall be to figure numbers, not page numbers. Reference to indexed items shall include both index and figure number (for example, “The ON-OFF switch (34, figure 3)...”). Reference in the same paragraph to several items in the same figure (as in instructions detailing work procedures) shall include the figure number once in that paragraph. For example:

“(a) Disassemble Air Valve (see figure 6). Unscrew safety-disc retainer (2) from valve body (1) and remove safety-disc (3) and safety-disc washer (4).”

or

“(a) Unscrew safety-disc retainer (2, figure 6) from valve body and remove safety-disc (3) and safety-disc washer (4).”

5.3.5.8 Number references. Numbers less than 10 shall be spelled out; numbers 10 and greater shall be Arabic numerals. Double statement of numbers (a number spelled out followed by a numeral in parentheses) shall not be used. Decimal numbers less than a unit shall begin with a zero before the decimal point.

5.3.6 Style of writing.

5.3.6.1 Text. Clarity and completeness are essential in the writing of ORDALT instructions. Extraneous information shall be excluded. Repetition of words, phrases, numbers, and other descriptive terms shall be avoided except when required for clarity. When repetitions are necessary, they shall be consistent. For example, if the text concerns a missile cradle, all succeeding references shall describe it as “cradle” and not “mount”, “dolly”, or “stand”. Part nomenclature from part drawing title blocks shall be used.

5.3.6.2 Grammar and style. Except where DoD requirements differ, the U.S. Government Publishing Office Style Manual shall be used as a guide for capitalization, spelling, punctuation, syllabification, compounding words, tabular work, and other elements of grammar and style.

5.3.6.3 Grammatical person and mode. The second-person imperative shall be used for operational procedure (for example, “Break casing bead loose from wheel flange”). The third person shall be used for description and discussion (for example, “The torsion link assembly transmits torsional load from the axle to the shock strut”).

5.3.6.4 Use of “shall”, “will”, “should”, and “may”. The word “shall” shall be used to express a mandatory or binding provision. “Will” may be used to express declaration of purpose. It may be necessary to use “will” in cases where simple futurity is required, such as “Power to the junction box will be supplied by the ship”. The words “should” and “may” shall be used whenever it is necessary to express nonmandatory provisions or an acceptable or preferred means of accomplishment.

5.3.6.5 Abbreviations. Abbreviations shall be in accordance with ASME Y14.38 and the U.S. Government Publishing Office Style Manual.

5.3.6.6 Warnings, cautions, and notes. Warnings, cautions, and notes shall be used as defined herein. The individual words “WARNING”, “CAUTION”, and “NOTE” shall appear in bold capital letters above or preceding the descriptive precautionary condition. Warnings and cautions shall precede the instructions for the procedure or practice involved. Notes may precede or follow the applicable text. Warnings, cautions, and notes shall not receive a paragraph number. Warnings, cautions, and notes shall be used in accordance with the following criteria:

- a. **WARNING**. To highlight an installation procedure, practice, condition, statement, or other instruction that, if not strictly observed, could result in injury, death, or long-term health hazard to personnel.
- b. **CAUTION**. To highlight an installation procedure, practice, condition, or statement that, if not strictly observed, could result in damage to or destruction of equipment or loss of mission effectiveness.
- c. **NOTE**. To highlight an essential installation procedure, condition, or statement that requires special attention.

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5.3.6.6.1 Health hazards. Procedures prescribed for the alteration of equipment shall be consistent with the safety standards established by the Occupational Safety and Health Act of 1970, Public Law 91-596 and DoDD 4715.1. Warnings and cautions shall also be used when hazardous chemicals or adverse health factors in the environment for alteration of the equipment cannot be eliminated. A list of personnel protective devices shall be included.

5.3.6.6.2 Nuclear hardness. If equipment to be ORDALTEd has nuclear survivability requirements, such as overpressure and burst, thermal radiation, electromagnetic pulses, and transient radiation effects on electronics, applicable cautions shall be incorporated into the ORDALT instructions to ensure that hardness of equipment is not degraded during the modification. Care shall be taken not to include classified information in an unclassified ORDALT instruction.

5.3.6.6.2.1 Symbol. All hardness critical processes (HCP) and steps shall be marked with the symbol "HCP" as follows:

- a. When an entire paragraph (including all subparagraphs) is considered hardness critical, only the major paragraph shall be marked. The symbol "HCP" shall be placed between the paragraph number and title.
- b. When only certain processes/steps within a paragraph are hardness critical, only the applicable process/step shall be marked. The symbol "HCP" shall be placed between the step number and text.

5.3.6.6.2.2 Explanation. The instructions shall include a listing and explanation of the symbol "HCP" and other pertinent information as necessary to emphasize the specialness of hardness features. This shall include an explanation that the symbol establishes the requirement that all paragraphs and processes and steps identified by the symbol must be followed as written to ensure nuclear hardness is not degraded. This explanation shall be preceded by a "CAUTION" heading.

5.3.6.6.3 Electrostatic discharge sensitive (ESDS) parts. If equipment to be handled, modified, or installed contains ESDS parts, components, or circuits, applicable cautions and symbols shall be incorporated into the ORDALT instruction to ensure ESDS parts are not damaged or degraded during such handling, modification or installation.

5.3.6.6.3.1 Symbol. All paragraphs which address handling, modification, or installation that could damage ESDS parts shall be identified by the ESDS symbol ESDS. The symbol shall not be included in the paragraph title in the table of contents. Use of the symbol shall be as follows:

- a. When the entire procedure and all subordinate paragraphs and steps describe handling, modification, or installation that could damage ESDS parts, the ESDS symbol shall be inserted immediately following the paragraph number (for example, "13.3 ESDS Installation of Test Switch").
- b. When all subordinate paragraph and steps are not related to handling, modification, or installation that could damage ESDS parts, only those related shall be annotated.
- c. ORDALT actions that could damage ESDS parts, but which are not directly related to handling, modification, or installation of ESDS parts, shall not be annotated with the ESDS symbol but shall be preceded by a caution.
- d. Illustrations, drawings, and schematics shall be marked with the ESDS symbol in accordance with MIL-STD-1686.

5.3.6.6.3.2 Explanation. ORDALT instructions shall include a listing and explanation of the ESDS symbol used therein. Other pertinent information shall be included as necessary to emphasize the uniqueness of ESDS parts. This shall include an explanation that the ESDS symbol requires that all ESDS parts be handled according to ESDS device handling procedures in accordance with MIL-STD-1686. This explanation shall be preceded by a "CAUTION" heading.

5.3.6.6.4 Environmental protection. All ORDALTs that require the use, transportation, handling, storage, or disposal of fuels, toxic and hazardous substances, chemicals, ordnance or munitions, or other hazardous materials shall meet the requirements of the Federal Environmental Protection Standards.

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5.4 Packaging. Packaging of copy and related artwork for shipment shall be in accordance with MIL-STD-38784.

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use. This standard is intended for use in preparing all ORDALT instructions issued by NAVSEA.

6.2 Acquisition requirements. Acquisition documents should specify the following:

- a. Title, number, and date of this standard.
- b. ORDALT format (long or short) (see 4.2).
- c. ORDALT identification number(s) assignment (see 4.6).
- d. Organization(s) responsible for planning and for accomplishing the proofing of the ORDALT kit hardware and affected documentation (see 4.8).
- e. Organization responsible for approval and authentication of the ORDALT instruction (see 4.9 and 5.1.2.3).
- f. Nomenclature assignment (see 5.1.1.5).
- g. Command code/controlling office code for the ORDALT instruction (see 5.1.1.7).
- h. Distribution statement (see 5.1.1.8).
- i. When the export control warning notice is applicable (see 5.1.1.9).
- j. Distribution list (see 5.2.1).
- k. ORDALT installation priority levels assigned (see 5.2.7, 5.2.7.1, 5.2.7.1.1, and 5.2.7.2).
- l. Accomplishment levels assigned (see 5.2.8).
- m. When an ORDALT installation milestone chart is required (see 5.2.9.1).
- n. Sampling inspection requirements for verification purposes (see 5.2.13.5.2).
- o. Alternate methods of preparing copy (see 5.3.1).

6.3 Associated data item descriptions (DID). This standard has been assigned an Acquisition Management Systems Control (AMSC) number authorizing it as the source document for the following DID. When it is necessary to obtain the data, the applicable DID must be listed on the Contract Data Requirements List (DD Form 1423).

<u>DID Number</u>	<u>DID Title</u>
DI-SESS-82113	Ordnance Alteration (ORDALT) Instructions

The above DID was current as of the date of this standard. The ASSIST database should be researched at <https://quicksearch.dla.mil/> to ensure that only current and approved DIDs are cited on the DD Form 1423.

6.4 Tailoring guidance for contractual application. To ensure proper application of this standard, invitations for bids, requests for proposals, and contractual statements of work should tailor the requirements in sections 4 and 5 of this standard to exclude any unnecessary requirements.

6.5 ORDALT instruction policy and procedural guidance. For policy and guidance pertaining to configuration changes/ORDALTs installed or planned for accomplishment during and outside of depot level availabilities, see NAVSEAINST 4130.12, Configuration Management (CM) Policy and Guidance; and SL720-AA-MAN-030.

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6.6 Subject term (key word) listing.

Accomplishment levels

Allowance changes

Classification of characteristics

Configuration

Design changes

Engineering changes

Environmental protection

Health hazards

Identification and marking

Installation

Kit

Modification

Naval ordnance equipment

Nuclear hardness

Priority levels

Quality assurance provisions

Retrofit

Rework

Shipboard work, minor

Supply data

Weight and moment

6.7 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

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CAGE CODE 53711

ORDALT XXXX1

ORDALT INSTRUCTION

REMOTE CONTROL PANEL MARK 324 MODS 0 & 1 (U)

DATA CONTROL DISTRIBUTION BOXES MARK 11 MODS 0 & 1 (U)

ROCKET LAUNCHING SYSTEM MARK 28 MODS 1 & 5 (U)

SEA 62Y1

DISTRIBUTION STATEMENT F. Further dissemination only as directed by Commander, Naval Sea Systems Command (SEA 62Y1), Washington, D.C. 20362-5101 (1 July 1990) or higher DoD authority.

WARNING – This document contains technical data whose export is restricted by the Arms Export Control Act (Title 22, U.S.C., Sec 2751, et seq.) or the Export Administration Act of 1979 (Title 50, U.S.C., App. 2401 et seq.), as amended. Violations of these export laws are subject to severe criminal penalties. Disseminate in accordance with the provisions of DoD Directive 5230.25.

PUBLISHED BY DIRECTION OF COMMANDER, NAVAL SEA SYSTEMS COMMAND

1 JULY 1990

CLASSIFIED BY: _____ (AUTHORITY)

DECLASSIFIED BY: _____ (OADR)

CONFIDENTIAL

(This page is unclassified)

FIGURE 1. Example of classified ORDALT title page – distribution statement F.

MIL-STD-1662D(OS)

CONFIDENTIAL

CAGE CODE 53711

ORDALT XXXX2

ORDALT INSTRUCTION

SIGNAL DATA CONVERTER MARK 73 MODS 1 AND 2

FIRE CONTROL SYSTEM MARK 133 MODS 6 AND 8

SEA 06U2

DISTRIBUTION STATEMENT E. Distribution authorized to DoD components only (Critical Technology) (5 July 1989). Other requests shall be referred to Commander, Naval Sea Systems Command (SEA 06U2), Washington, D.C. 20362-5101.

WARNING – This document contains technical data whose export is restricted by the Arms Export Control Act (Title 22, U.S.C., Sec 2751, et seq.) or the Export Administration Act of 1979 (Title 50, U.S.C., App. 2401 et seq.), as amended. Violations of these export laws are subject to severe criminal penalties. Disseminate in accordance with the provisions of DoD Directive 5230.25.

PUBLISHED BY DIRECTION OF COMMANDER, NAVAL SEA SYSTEMS COMMAND

5 JULY 1989

FIGURE 2. Example of unclassified ORDALT title page – distribution statement E.

MIL-STD-1662D(OS)

CONFIDENTIAL

CAGE CODE 53711

ORDALT XXXX3

ORDALT INSTRUCTION

TRANSFER TRAY ASSEMBLY

5" SLIDE ASSEMBLY MK 25 MODS 2 AND 3

5"/54 CALIBER GUN MOUNT

MK 50 MODS 9 AND 10

SEA 62Y1

DISTRIBUTION STATEMENT D. Distribution authorized to the Department of Defense and U.S. DoD contractors only (Critical Technology) (16 March 1992). Other requests shall be referred to Commander, Naval Sea Systems Command (SEA 62Y1), Washington, D.C. 20362-5101.

WARNING – This document contains technical data whose export is restricted by the Arms Export Control Act (Title 22, U.S.C., Sec 2751, et seq.) or the Export Administration Act of 1979 (Title 50, U.S.C., App. 2401 et seq.), as amended. Violations of these export laws are subject to severe criminal penalties. Disseminate in accordance with the provisions of DoD Directive 5230.25.

PUBLISHED BY DIRECTION OF COMMANDER, NAVAL SEA SYSTEMS COMMAND

16 MARCH 1992

FIGURE 3. Example of unclassified ORDALT title page – distribution statement D.

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CONFIDENTIAL

ORDALT XXXX1

5.2 (U) In addition to the in-service systems of paragraph 5.1, there are seven Remote Control Panels (serial numbers 7, 14, 16, 17, 18, 31, and 34) and seven Data Control Distribution Boxes (serial numbers 1, 7, 14, 16, 17, 18, and 34) in storage or awaiting overhaul. These units are stored at Naval Weapons Supply Center/Crane and Naval Ordnance Station/Louisville. This ORDALT will be accomplished on these units on an as required basis.

6. (C) ORDALT ACCOMPLISHMENT KEYPOINT CHECK

6.1 (C) Should verification of ORDALT accomplishment be required, the following keypoint check will be made:

6.1.1 (C) When the drawer assembly of the Remote Control Panel is in the extended position, verify that filters 2FL14, 2FL15, 2FL26, and 2FL17 have been added to the Remote Control Panel Assembly 2875616 or 2875906.

6.1.2 (C) At the Data Control Distribution Box Mk 11 Mod 0 and 1, Drawing 2875617 or 2875904:

- (1) Disconnect cable W4 from connector receptacle 1A3J7.
- (2) Extend the Logic Drawer Assembly to the service position and remove circuit board T10A.
- (3) Using a multimeter, verify continuity between 1A3J7-B and XT10A-A.

7. (U) ORDALT INSTALLATION PRIORITY LEVELS

7.1 (U) This ORDALT shall be accomplished in accordance with the Fleet Modernization Program (FMP) Amalgamated Military/Technical Improvement Plan (AMT) as follows: CVN-68, Priority Level #2, Reliability and Maintainability (Primary Mission Area) and LCC-19, Priority Level #4, Reliability and Maintainability (Secondary Mission Area).

8. (U) ACCOMPLISHMENT LEVEL

8.1 (U) This is an accomplishment level 2 (Intermediate) ORDALT and shall be accomplished during tender/shore-based availability by Naval Sea Support Center personnel or by tender/shore base personnel under the direction or supervision of Naval Sea Support Center personnel.

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FIGURE 4. Example of classified page of a classified ORDALT.

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ORDALT XXXX4

3. (U) PURPOSE

3.1 This ORDALT eliminates potential Launcher Train Drive casualties due to excessive impact on the Launcher Stationary (5207055) and rotating (5206051) stop assemblies and provides ready access to Launcher Train Drive interlock switches S204 and S205.

3.2 This ORDALT requires removal of existing stationary (5206034) and rotating (6206051) stop assemblies and replacement with redesigned stationary stop and cam bracket assemblies that will be attached by new stationary base/foundation mounting bolts. Existing interlock switches S204 and S205 will be removed from inside the training gear base and relocated to a switch assembly (5760590) mounted externally on the rotating base. The externally mounted sector clear switch, S206, will be relocated to the switch assembly (5760590) and new actuating cams and mounting hardware is provided for each of the three switches.

4. (U) AUTHORITY

4.1 Preparation of this ORDALT was authorized by NAVSEA letter SEA 62Y1: BAS XXXX Ser XXXXXX dated 21 February 1992 and Configuration Control Board Directive No. 90-U-XXX assigned by NAVSEA to Naval Undersea Warfare Center Division, Newport, RI Engineering Change Proposal (ECP) XX-XXXX-, NCN YXXXXXX.

5. (U) APPLICATION

5.1 The work required by this ORDALT shall be accomplished subsequent to ORDALT Number XXXXX.

5.2 This ORDALT is applicable to all Surface Vessel Torpedo Tubes Mk 22 Mod 15 with training gear Mk 10 Mod 2. Applicable ships and station are:

DD-965 through DD-998

DDG-992 through DDG-995

NAVUNSEAWARCENDIV, Newport, RI

DD-999

CG-46 through CG-50

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CONFIDENTIAL

(This page is Unclassified)

FIGURE 5. Example of unclassified page of a classified ORDALT.

MIL-STD-1662D(OS)

CAGE CODE 53711	ORDALT XXXX3
CHANGE 1	
ORDALT INSTRUCTION	
SIGNAL DATA CONVERTER MARK 73 MODS 1 AND 2	
FIRE CONTROL SYSTEM MARK 133 MODS 6 AND 8	
SEA 06U2	
DISTRIBUTION STATEMENT E. Distribution authorized to DoD components only (Critical Technology) (5 July 1989). Other requests shall be referred to Commander, Naval Sea Systems Command (SEA-06U2), Washington, D.C. 20362-5101.	
WARNING – This document contains technical data whose export is restricted by the Arms Export Control Act (Title 22, U.S.C., Sec 2751, et seq.) or the Export Administration Act of 1979 (Title 50, U.S.C., App. 2401 et seq.), as amended. Violations of these export laws are subject to severe criminal penalties. Disseminate in accordance with the provisions of DoD Directive 5230.25.	
<u>PUBLISHED BY DIRECTION OF COMMANDER, NAVAL SEA SYSTEMS COMMAND</u>	
5 JULY 1989	
CHANGED 15 AUGUST 1990	

FIGURE 6. Example of ORDALT change title page.

MIL-STD-1662D(OS)

CAGE CODE 53711	ORDALT XXXX2
CHANGE 2	
ORDALT INSTRUCTION	
SIGNAL DATA CONVERTER MARK 73 MODS 1 AND 2	
FIRE CONTROL SYSTEM MARK 133 MODS 6 AND 8	
SUPPLEMENTS ORDALT XXXX2, CHANGE 1	
SEA 06U2	
DISTRIBUTION STATEMENT E. Distribution authorized to DoD components only (Critical Technology) (5 July 1989). Other requests shall be referred to Commander, Naval Sea Systems Command (SEA 06U2), Washington, D.C. 20362-5101.	
WARNING – This document contains technical data whose export is restricted by the Arms Export Control Act (Title 22, U.S.C., Sec 2751, et seq.) or the Export Administration Act of 1979 (Title 50, U.S.C., App. 2401 et seq.), as amended. Violations of these export laws are subject to severe criminal penalties. Disseminate in accordance with the provisions of DoD Directive 5230.25.	
<u>PUBLISHED BY DIRECTION OF COMMANDER, NAVAL SEA SYSTEMS COMMAND</u>	
5 JULY 1989	
CHANGED 10 NOVEMBER 1990	

FIGURE 7. Example of succeeding ORDALT change title page.

MIL-STD-1662D(OS)

ORDALT XXXX5

CHANGE 1

3. Allowance Parts List Deletion/Allowance Decrease.

12.8.3.1 The following items/quantities will be deleted from the present Allowance Parts list (APL) after the equipment is altered:

APL ORXXXX5001

<u>REFERENCE DESIGNATION</u>	<u>CAGE CODE/PART NO.</u>	<u>NOMENCLATURE/ DESCRIPTION</u>	<u>NATIONAL STOCK NO.</u>	<u>PARTS POPULATION DELETED</u>	<u>ALLOWANCE QUANTITY DECREASE</u>
	(10001) XXX281	Scoop, Inlet, Water	1HI365-01- 031-XXXB	1	0

12.8.4 Allowance Equipage List Parts Deletion/Allowance Decrease.

12.8.4.1 None.

13. DETAILED INSTRUCTIONS

NOTE: When problems are encountered in accomplishing this ORDALT, the preaddressed ORDALT Installation Problem Reporting Statement, Enclosure 11.4, shall be completed and mailed.

13.1 Preparatory Information and Procedures

13.1.1 Verify compliance with Quality Assurance requirements when an asterisk (*) precedes a paragraph number.

13.1.2 Comply with accomplishing activity Quality Assurance requirements.

13.1.3 Retain removed items for reinstallation if disposition is not specified.

13.1.4 Use standard ship practices to modify metal components.

NOTES: (1) Prior to modification of Afterbody/Tailcone XXXXXXXX, verification of accomplishment for ORDALT XXXX is required.

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CHANGE 1

FIGURE 8. Example of ORDALT change page.

MIL-STD-1662D(OS)

CAGE CODE 53711

ORDALT XXXX2A

ORDALT INSTRUCTION

SIGNAL DATA CONVERTER MARK 73 MODS 1 AND 2

FIRE CONTROL SYSTEM MARK 133 MODS 6 AND 8

NOT TO BE ACCOMPLISHED ON MATERIAL ON

WHICH ORDALT XXXX2, CHANGES 1 AND 2 HAVE BEEN ACCOMPLISHED

SEA-06U2

DISTRIBUTION STATEMENT E. Distribution authorized to DoD components only (Critical Technology) (5 July 1989). Other requests shall be referred to Commander, Naval Sea Systems Command (SEA-06U2) Washington, D.C. 20362-5101.

WARNING – This document contains technical data whose export is restricted by the Arms Export Control Act (Title 22, U.S.C., Sec 2751, et seq.) or the Export Administration Act of 1979 (Title 50, U.S.C., App. 2401 et seq.), as amended. Violations of these export laws are subject to severe criminal penalties. Disseminate in accordance with the provisions of DoD Directive 5230.25.

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5 JULY 1989

REVISED 12 MARCH 1991

FIGURE 10. Example of ORDALT revision title page.

MIL-STD-1662D(OS)

CAGE CODE 53711

ORDALT XXXX6

ORDALT INSTRUCTION

SIGNAL DATA CONVERTER MARK 73 MODS 1 AND 2

FIRE CONTROL SYSTEM MARK 133 MODS 6 AND 8

SUPERSEDES ORDALT XXXX2A

TO BE ACCOMPLISHED WHETHER OR NOT ORDALT

XXXX2A HAS BEEN ACCOMPLISHED

SEA-06U2

DISTRIBUTION STATEMENT E. Distribution authorized to DoD components only (Critical Technology) (5 July 1989). Other requests shall be referred to Commander, Naval Sea Systems Command (SEA-06U2) Washington, D.C. 20362-5101.

WARNING – This document contains technical data whose export is restricted by the Arms Export Control Act (Title 22, U.S.C., Sec 2751, et seq.) or the Export Administration Act of 1979 (Title 50, U.S.C., App. 2401 et seq.), as amended. Violations of these export laws are subject to severe criminal penalties. Disseminate in accordance with the provisions of DoD Directive 5230.25.

PUBLISHED BY DIRECTION OF COMMANDER, NAVAL SEA SYSTEMS COMMAND

12 JUNE 1991

FIGURE 11. Example of superseding ORDALT title page – noncontingent application.

MIL-STD-1662D(OS)

CAGE CODE 53711

ORDALT XXXX7

ORDALT INSTRUCTION

SIGNAL DATA CONVERTER MARK 73 MODS 1 AND 2

FIRE CONTROL SYSTEM MARK 133 MODS 6 AND 8

SUPERSEDES ORDALT XXXX6. NOT TO BE

ACCOMPLISHED ON MATERIAL ON WHICH ORDALT

XXXX6 HAS BEEN ACCOMPLISHED

SEA-06U2

DISTRIBUTION STATEMENT E. Distribution authorized to DoD components only (Critical Technology) (5 July 1989). Other requests shall be referred to Commander, Naval Sea Systems Command (SEA-06U2) Washington, D.C. 20362-5101.

WARNING – This document contains technical data whose export is restricted by the Arms Export Control Act (Title 22, U.S.C., Sec 2751, et seq.) or the Export Administration Act of 1979 (Title 50, U.S.C., App. 2401 et seq.), as amended, Violation of these export laws are subject to severe criminal penalties. Disseminate in accordance with the provisions of DoD Directive 5230.25.

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31 JULY 1991

FIGURE 12. Example of superseding ORDALT title page – contingent application.

MIL-STD-1662D(OS)

ORDALT XXXX3

PREPARED BY:

NSWCIHODTD Picatinny Detachment
Systems Integration Department, Code G
Guns Division, Code G3
Major Caliber Guns Branch, Code G34
MK 45 Gun Mount In-Service Engineering Agent
Bldg 61N
Picatinny Arsenal, NJ 07806-5000

IN-SERVICE ENGINEERING AGENT FOR THE WEAPON SYSTEM/EQUIPMENT

NSWCIHODTD Picatinny Detachment
Systems Integration Department, Code G
Guns Division, Code G3
Major Caliber Guns Branch, Code G34
MK 45 Gun Mount In-Service Engineering Agent
Bldg 61N
Picatinny Arsenal, NJ 07806-5000

APPROVED FOR NAVSEA:

Signature:

Position:

Code:

Effective Date

FIGURE 13. Example of ORDALT signature page.

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ORDALT XXXX3
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ORDALT XXXX3

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ENCLOSURE

11.1	ORDALT INSTALLATION MILESTONE CHART
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11.3	SUPPLY/MATERIAL SUPPORT DATA
11.4	ORDALT INSTRUCTION PROBLEM REPORTING STATEMENT

FIGURE 14. Example of ORDALT table of contents – Continued.

MIL-STD-1662D(OS)

1. DISTRIBUTION					
1.1 Copies of this ORDALT shall be distributed in accordance with Standard Navy Distribution list, Part I (latest edition and date) and Part 2 (latest edition and date).					
<u>UIC</u>	<u>SNDL CODE</u>	<u>ADDRESSEE(S)</u>	<u>NUMBER OF ADDRESSEES</u>	<u>NUMBER OF COPIES TO EACH</u>	<u>TOTAL NO. OF COPIES</u>
N53825	24D1	COMNAVSURFLANT NORFOLK, VA	1	1	1
N53824	24D2	COMNAVSURFPAC SAN DIEGO, CA	1	1	1
N60550	C84L	FDRMC DET ROTA, SP	1	1	1
N45598	C31G	NAVSHIPRECFAC DET SASEBO, JA	1	1	1
N62758	FB30	NAVSHIPREPFAC YOKOSUKA, JA	6	1	6
N00024	FKP	COMNAVSEASYSKOM WASHINGTON, DC	1	1	1
N00178	FKP4E	NAVSURFWARCENDIV DAHLGREN, VA	3	1	3
N00104	FKM14	NAVSUP WEAPONS SYTEM SUPPORT MECHANICSBURG, PA	2	1	2
N63394	FKP4E	NAVSURFWARCENDIV PORT HUENEME, CA	1	1	1
N38634	C84A	NAVSURWARCENDET PICATINNY, NJ	5	1	5
N00164	FKP4E	NAVSURFWARCENDIV CRANE, IN	1	1	1
N62786	FKP8	SUPSHIP BATH, ME	2	1	2
N69316	FKP83	SUPSHIP GULF COAST, MS	2	1	2
N50054	FKP3A	MARMC NORFOLK, VA	2	1	2
N55236	FKP3	SOUTHWEST RMC SAN DIEGO, CA	4	1	4
NOTE: Additional copies of this ORDALT instruction may be obtained from the GWS Configuration Data Management Database (CDMD), https://nsercdev.nswc.navy.mil/viewnet/GWS/default.aspx , or by contacting the MK45 ISEA at: mm_inhd_nswc_Mk45_ISEA@navy.mil.					
1					

FIGURE 15. Example of ORDALT instruction (text).

MIL-STD-1662D(OS)

ORDALT XXXX3

2. SUBJECT

2.1 Transfer Tray Assembly; 5" Slide Assembly Mk 25 Mods 2 and 3; 5"/54 Caliber Gun Mount Mk 50 Mods 9 and 10.

3. PURPOSE

3.1 This ORDALT replaces the existing transfer tray eccentric link pin with a concentric link pin and provides adjustable stops for the operating piston's stroke limits. This new assembly allows the transfer tray to be adjusted by setting the piston's stroke limits. Once the stroke limits are set, further adjustment is not necessary. This reduces the time required for outboarding of transfer trays for routine maintenance and reduces the danger of misalignment upon reassembly.

4. AUTHORITY

4.1 Preparation of this ORDALT was authorized by Naval Sea Systems Command letter SEA 62Y1/XXX:CDS 4130 dated XX March 1992 and Configuration Control Board (CCB) Directive No. G-8X-SS, assigned to Naval Ordnance Station, Crane Division, Naval Surface Warfare Center, Louisville, Engineering Change Proposal (ECP) XXX-XXX, NCN GXXXXXXX.

5. APPLICATION

NOTE: The work required by this ORDALT instruction may be accomplished without dependency or concurrency with any other ORDALT, SHIPALT, Field Change, or Engineering Change.

5.1 Test Equipment for Checkout.

5.1.1 None.

5.2 Identity and Location.

5.2.1 This ORDALT is applicable to 5"/54 Caliber Mk 50 Mods 9 and 10 Gun Mounts located on/at the following ships/shore activities:

SHIPS

DDG 2 thru DDG 24

DD 945

CG 26 thru CG 34

CGN 35

DDG 37 thru DDG 46

SHORE ACTIVITIES

NTC, Great Lakes, IL

FCDSTC Dam Neck, VA

FTC San Diego, CA

NSWC Mount, Dahlgren, VA

Prototype, NAVSURFWARCEN,

ORDSTA, Louisville, KY

FIGURE 15. Example of ORDALT instruction (text) – Continued.

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5.3 Spares.

5.3.1 In addition to the in-service systems of paragraph 5.2, there are spares to be modified in the supply system (see paragraph 12.6).

6. ORDALT ACCOMPLISHMENT KEYPOINT CHECK

6.1 Should verification of ORDALT accomplishment be required, the following keypoint check shall be made.

6.1.1 Reference Drawing XXX661, sheet 3. From gun pocket area, verify that adjustable piston retainer XXX551 (Kit Item 3) has been installed in operating piston valve block.

6.1.2 Reference Drawing XXX659, sheet 3. Verify that concentric link pin XXX556 (Kit Item 4) has been installed.

7. ORDALT INSTALLATION PRIORITY LEVELS

7.1 This ORDALT shall be accomplished in accordance with the Fleet Modernization Program (FMP) Amalgamated Military/Technical Improvement Plan (AMT) as follows:

DDG-2, Priority Level #3, Primary Mission Modernization, CG Priority Level #3, Primary Mission System Modernization.

8. ACCOMPLISHMENT LEVEL

8.1 This is a Level 2 (Intermediate) ORDALT and shall be accomplished during tender/shore base availability by Naval Sea Support Center (NAVSEACEN) personnel or by tender/shore-based personnel under the direction or supervision of NAVSEACEN personnel.

NOTE: For the convenience of the Government, this ORDALT may be accomplished by a higher accomplishment level activity than assigned by this ORDALT instruction. The higher accomplishment level activities are deemed to have the skills and equipment necessary to accomplish the change without the assistance or supervision from lower accomplishment level activities. In general, this ORDALT shall not be accomplished by a lower accomplishment level activity than assigned in this ORDALT instruction.

9. MAN-HOURS REQUIREDFIGURE 15. Example of ORDALT instruction (text) – Continued.

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9.1 It is estimated that a total of 20 man-hours by ordnance technicians will be required to accomplish the work required by this ORDALT and to perform the verification tests. Installation milestones are displayed in enclosure 11.1.

10. PARTS LIST AND DRAWING REFERENCES

10.1 Microfilm Aperture Cards. Microfilm aperture card files shall be maintained by removing cards for superseded and deleted drawings and inserting cards for new and revised drawings. Microfilm aperture cards shall be ordered from Computer Aided Logistic Support (CALS) Integration and Management Division, Naval Surface Warfare Center, Louisville, KY 40214-5001.

10.2 Required Drawings.

- (10001) XXX659A, Sheet 3
 - (10001) XXX661T, Sheets 1 and 3
 - (10001) XXX719E
 - (10001) XXX976G, Sheet 23
- Figures 1 through 6

10.3 New/Revised Drawings.

(53711)	XXX840	New	Obtain as specified in 10.1
(53711)	XXX550	New	Obtain as specified in 10.1
(53711)	XXX551	New	Obtain as specified in 10.1
(53711)	XXX556	New	Obtain as specified in 10.1
(53711)	XXX996	New	Obtain as specified in 10.1
(10001)	XXX659, Sheet 3	Revised	Obtain as specified in 10.1
(10001)	XXX661, Sheet 3	Revised	Obtain as specified in 10.1
(10001)	XXX976, Sheet 23	Revised	Obtain as specified in 10.1

10.4 Deleted Drawings.

(10001)	XXX323-1	Deleted	Destroy
(10001)	XXX706	Deleted	Destroy
(10001)	XXX775	Deleted	Destroy
(10001)	XXX777	Deleted	Destroy

10.5 Drawings and References for Information Only.

10.5.1 Drawings.

10.5.1.1 None.

FIGURE 15. Example of ORDALT instruction (text) – Continued.

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10.5.2 References.**10.5.2.1** DOD-STD-2101.**11. ENCLOSURES****11.1** ORDALT Installation Milestone Chart of Paragraph 9.1.**11.2** Drawings and Figures as Listed in Paragraph 10.2.**11.3** Supply/Material Support Data (removable copy of paragraph 12.8).**11.4** ORDALT Installation Problem Reporting Statement of Paragraph 13.**12. SUPPLY DATA****12.1** Ordering Data.

12.1.1 A National Stock Number (NSN) will not be assigned to ORDALT kit XXXX3. The ORDALT kit shall be requisitioned from Commanding Officer, Naval Ordnance Station, Code 1143, Crane Division, Naval Surface Warfare Center, Louisville, KY 40214-5001 by MILSTRIP Requisition using Routine Identifier N11. One ORDALT kit will contain sufficient material to accomplish this ORDALT at each applicable activity.

12.1.2 The disposition of installation and checkout spares shall be as follows; those spares not used during installation and checkout shall be provided to the ship's supply for retention by the ship.

12.2 Kit Content.

12.2.1 Each ORDALT kit XXXX3 includes two copies of this ORDALT instruction, one copy of technical manual changes, and the following materials:

<u>KIT ITEM NUMBER</u>	<u>NOMENCLATURE/ DESCRIPTION</u>	<u>NATIONAL STOCK NO.</u>	<u>COGE CODE</u>	<u>PART NO.</u>	<u>MEC</u>	<u>SM&R CODE</u>	<u>BRF/ TRF</u>	<u>UNIT COST</u>	<u>ORDALT KIT QTY</u>
1.	Key, Lock	1440-LL- HDN-XXX4	53711	XXX840	1	PA5ZZ	.011		2
2.	Retainer, Sleeve	1440-LL- HDN-XXX6	53711	ZZZ550	1	PA5ZZ	.010		2

FIGURE 15. Example of ORDALT instruction (text) – Continued.

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<u>KIT ITEM NUMBER</u>	<u>NOMENCLATURE /DESCRIPTION</u>	<u>NATIONAL STOCK NO.</u>	<u>COGE CODE</u>	<u>PART NO.</u>	<u>MEC</u>	<u>SM&R CODE</u>	<u>BRF /TRF</u>	<u>UNIT COST</u>	<u>ORDALT KIT QTY</u>
3.	Retainer, Piston	1440-LL-HDN- XXX7	53711	XXX551	1	PA5ZZ	.010		2
4.	Pin, Link, Concentric	1440-LL-HDN- XXX5	53711	XXX556	1	PA5ZZ	.011		2
5.	Seal, Wiper, Ring	1020-00-185- XXX2	10001	XXX513 -12	1	PA5ZZ	.13		4**
6.	Packing, Preformed (U-cup Seal)	5330-00-485- XXX8	10001	XXX512 -96	1	PA5ZZ	.13		4**
7.	Packing, Preformed (O-ring)	5330-00-576- 9731	96906	MS2877 5-227	1	PA5ZZ	.13		4**
8.	Packing, Preformed (O-ring)	5330-00-641- 3407	96908	Ms2877 6-224	1	PA5ZZ	.13		4**
9.	Cap screw #10-24X 3/8	5305-01-029- XXX6	10001	XXX207 -C059	1	PA5ZZ	.13		2
10.	Ring, Retaining, External	5365-01-017- XXX1	10001	XXX400 -0005A	1	PA5ZZ	.13		4
11.	Ring, Retaining, External	5365-01-015- XXX1	10001	XXX400 -0007A	1	PA5ZZ	.13		2
12.	Ring, Retaining, External	5365-01-020- XXX8	10001	XXX400 -0006A	1	PA5ZZ	.13		2
13.	Wrench, Spanner (Special)	5120-LL-HDN- XXX3	53711	XXX996	1	PA5ZZ			1*

** Two spares included in kit.

* Special tool to be retained onboard after ORDALT accomplishment.

12.3 Special Materials, Tools, or Test Equipment Required for Accomplishment but Not Supplied in Kit.

12.3.1 The following items will be required for ORDALT accomplishment, but will not be supplied in the ORDALT kit:

FIGURE 15. Example of ORDALT instruction (text) – Continued.

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<u>NOMENCLATURE/ DESCRIPTION</u>	<u>NATIONAL STOCK NO.</u>	<u>COGE CODE</u>	<u>PART/MODEL NO.</u>	<u>SM&R CODE</u>	<u>QUANTITY REQUIRED</u>	<u>STOCKING ACTIVITY/ SOURCE</u>	<u>REMARKS</u>
Piers, Retaining Ring		10001	XXX792			Own Supply	
Allen Wrench Set						Own Supply	
Screw Driver						Own Supply	
Open End Wrench 1.25 Inch						Own Supply	
Thickness Gauges (.001 to .030 Range)				PA00Z	1	Own Supply	
Tee Wrench		10001	XXX274-4	PA00Z	1	Own Supply	
Tool, Insertion		10001	SAXXX145	PA00Z	1	Own Supply	

12.4 Special Tools, Support Equipment, and Test Equipment Required After Installation.

12.4.1 The following item is required for equipment operation and maintenance after ORDALT installation:

<u>NOMENCLATURE/ DESCRIPTION</u>	<u>NATIONAL STOCK NO.</u>	<u>COGE CODE</u>	<u>PART/MODEL NO.</u>	<u>SCAT CODE</u>	<u>QUANTITY REQUIRED</u>	<u>STOCKING ACTIVITY/ SOURCE</u>	<u>REMARKS</u>
Wrench, Spanner (Special)	5130-LL- HDN-XXX3	53711	XXX996		1	Ship	Kit Item 13

12.5 Disposition of Removed Materials/Parts/Units

12.5.1 The following items will be removed from installed or spare equipment and disposed of as indicated herein:

<u>NOMENCLATURE/ DESCRIPTION</u>	<u>NATIONAL STOCK NO.</u>	<u>CAGE CODE</u>	<u>PART NO.</u>	<u>QUANTITY REMOVED</u>	<u>DISPOSITION CODE</u>
Packing, Preformed (O-ring)	5330-00-194-3711	10001	AN 6230-5	2	2*
Packing, Preformed (U-cup Seal)	5330-00-485-XXX8	10001	XXX512-96	2	2*
Rod, Wiper	1020-00-185-XXX2	10001	XXX513-17	2	2*
Pin, Link, Eccentric	1020-00-026-XXX3	10001	XXX1323-1	2	2*

FIGURE 15. Example of ORDALT instruction (text) – Continued.

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<u>NOMENCLATURE/ DESCRIPTION</u>	<u>NATIONAL STOCK NO.</u>	<u>CAGE CODE</u>	<u>PART NO.</u>	<u>QUANTITY REMOVED</u>	<u>DISPOSITION CODE</u>
Sleeve, Shaft	1020-00-021-XXX8	10001	XXX706	2	2*
Ring, Retaining, External	5365-01-017-XXX1	10001	XXX400-0005A	4	2*
Ring, Retaining, External	5365-01-015-XXX1	10001	XXX400-007A	2	2*
Ring, Retaining, External	5365-01-020-XXX8	10001	XXX400-0006A	2	2*
Retainer, Sleeve		10001	XXX775	2	2*
Lockout		10001	XXX777	2	2*

* Disposition Code 2 = Scrap

12.6 Alteration of Spare Assemblies/Equipment.

12.6.1 Assemblies/Equipment in Stock.

12.6.1.1 The following spares are affected by this ORDALT:

<u>NOMENCLATURE/DESCRIPTION</u>	<u>NATIONAL STOCK NO.</u>	<u>CAGE CODE</u>	<u>PART NO.</u>	<u>LOCATION OF SPARES</u>
Transfer Tray, RH	1020-00-021-XX50	10001	LDXXX500	NOSL TO 21 COG
Transfer Tray, LH	1020-00-021-XX61	10001	LDXXX501	NOSL TO 21 COG
Op. Cylinder, Transfer Tray & Empty Case Tray	1020-00-095-XX62	10001	LDXXX502	NOSL TO 21 COG
Op. Cylinder, Transfer Tray, LH	1020-00-021-XXX63	10001	LDXXX503	NOSL TO 21 COG

NOTE: Return spares to Commanding Officer, Naval Ordnance Station, Code 11, Crane Division, Naval Surface Warfare Center, Louisville, KY 40214-5001 for modification.

12.6.2 Parts/Materials Required to Modify Spares.

12.6.2.1 The following items are required for modification of the spares:

<u>KIT ITEM NUMBER</u>	<u>NOMENCLATURE /DESCRIPTION</u>	<u>NATIONAL STOCK NO.</u>	<u>COGE CODE</u>	<u>PART NO.</u>	<u>MEC</u>	<u>SM&R CODE</u>	<u>BRF /TRF</u>	<u>UNIT COST</u>	<u>ORDALT KIT QTY</u>
1.	Key, Lock	1440-LL-HDN- XXX4	53711	XXX840	1	PA5ZZ	.011		2

FIGURE 15. Example of ORDALT instruction (text) – Continued.

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<u>KIT ITEM NUMBER</u>	<u>NOMENCLATURE /DESCRIPTION</u>	<u>NATIONAL STOCK NO.</u>	<u>COGE CODE</u>	<u>PART NO.</u>	<u>MEC</u>	<u>SM&R CODE</u>	<u>BRF /TRF</u>	<u>UNIT COST</u>	<u>ORDALT KIT QTY</u>
2.	Retainer, Sleeve	1440-LL-HDN- XXX6	53711	XXX550	1	PA5ZZ	.010		2
3.	Retainer, Piston, Adjustable	1440-LL-HDN- XXX7	53711	XXX551	1	PA5ZZ	.010		2
4.	Pin, Link, Concentric	1440-LL-HDN- XXX5	53711	XXX556	1	PA5ZZ	.011		2
5.	Seal, Wiper, Ring	1020-00-185- XXX2	10001	XXX513 -12	1	PA5ZZ	.13		2
6.	Packing, Preformed (U-cup seal)	5330-00-485- XXX8	10001	XXX512 -96	1	PA5ZZ	.13		2
7.	Packing, Preformed (O-ring)	5330-00-576- 9731	96906	MS2877 5-227	1	PA5ZZ	.13		2
8.	Packing, Preformed (O-ring)	5330-00-641- 3407	96906	MS2877 5-224	1	PA5ZZ	.13		2
9.	Cap screw # 10-24X $\frac{3}{8}$	5305-01-029- XXX6	10001	XXX207 -C059	1	PA5ZZ	.13		2

12.7 New/Modified/Additional Spare Parts.**12.7.1** None.**12.8** Allowance Changes.

NOTE: The item(s) listed in paragraph 12.8.1 and 12.8.2 will appear on ORDALT APL ORXXXX3001 and ORDALT AEL ORXXXX3001 as add item(s). The item(s) listed in paragraphs 12.8.3 will appear on the ORDALT APL ORXXXX3001 as delete item(s). After the ORDALT is accomplished on all applicable equipment, the item(s) in paragraph 12.8.1 will be added to the equipment parent APL XXXXXX0005, and the item(s) in paragraph 12.8.3 will be deleted from the equipment parent APL. The item(s) in paragraph 12.8.2 will be added to the equipment parent AEL XXXXXX0005.

12.8.1 Allowance Parts List Parts Addition/Allowance Increase.FIGURE 15. Example of ORDALT instruction (text) – Continued.

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12.8.1.1 The following items/quantities will be added to the present Allowance Parts List (APL) after equipment is altered:

APL ORXXXX30001

<u>REFERENCE DESIGNATION</u>	<u>CAGE CODE/PART NO.</u>	<u>NOMENCLATURE/ DESCRIPTION</u>	<u>NATIONAL STOCK NO.</u>	<u>SM&R CODE</u>	<u>PARTS POPULATION ADDED</u>	<u>ALLOWANCE QUANTITY INCREASE</u>
	(10001) XXX207-C-059	Cap screw # 10-24X ⅜	5305-01- 029-XXX6	PA5ZZ	2	0
	(10001) XXX400-0005A	Ring, Retaining, External	5365-01- 017-XXX1	PA5ZZ	2	0
	(10001) XXX400-0006A	Ring, Retaining, External	5365-01- 020-XXX8	PA5ZZ	2	0
	(10001) XXX400-0007A	Ring, Retaining, External	5365-01- 020-XXX9	PA5ZZ	2	0
	(10001) XXX512-96	Packing, Preformed (U-cup seal)	5330-00- 485-XXX8	PA5ZZ	2	2**
	(10001) XXX513-12	Wiper, Ring	1020-00- 185-XXX2	PA5ZZ	2	2**
	(53711) XXX550	Retainer, Sleeve	1440-LL- HDN-XXX6	PA5ZZ	2	0
	(53711) XXX551	Retainer, Piston, Adjustable	1440-LL- HDN-XXX7	PA5ZZ	2	0
	(53711) XXX556	Pin, Link, Concentric	1440-LL- HDN-XXX5	PA5ZZ	2	0
	(53711) XXX840	Key, Lock	1440-LL- HDN-XXX4	PA5ZZ	2	0
	MS58775-224	Packing, Preformed (O-ring)	5330-00- 641-3407	PA5ZZ	2	0
	MS28775-227	Packing, Preformed (O-ring)	5330-00- 576-9731	PA5ZZ	2	2**

**Designates initial spares packaged in the ORDALT kit.

12.8.2 Allowance Equipage List Parts Addition/Allowance Increase.

12.8.2.1 The following items/quantities will be added to the present Allowance Equipage List (APL) after equipment is altered:

FIGURE 15. Example of ORDALT instruction (text) – Continued.

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AEL ORXXXX3001

<u>REFERENCE DESIGNATION</u>	<u>CAGE CODE/PART NO.</u>	<u>NOMENCLATURE/ DESCRIPTION</u>	<u>NATIONAL STOCK NO.</u>	<u>PARTS POPULATION DELETED</u>	<u>ALLOWANCE QUANTITY DECREASE</u>
	(10001) XXX323-1	Pin, Link Eccentric	1020-00-026-XXX3	2	0
	(10001) XXX706	Sleeve, Shaft	1020-00-021-XXX8	2	0
	(10001) XXX400-0005A	Ring, Retaining, External	5365-01-017-XXX1	2	0
	(10001) XXX400-0006A	Ring, Retaining, External	5365-01-020-XXX8	2	0
	(10001) XXX513-17	Rod, Wiper	1020-00-185-XXX2	2	0
	(10001) XXX512-96	Packing, Preformed (U-cup seal)	5330-00-485-XXX8	2	2
	(10001) XXX775	Retainer, Sleeve		2	0
	(10001) XXX777	Locknut		2	0
	AN6230-5	Packing, Preformed, (O-ring)	5330-00-174-XXX1	2	2

12.8.4 Allowance Parts List Deletion/Allowance Decrease.

12.8.4.1 None.

13. DETAILED INSTRUCTIONS

NOTE: When problems are encountered in accomplishing this ORDALT, the preaddressed ORDALT Installation Problem Reporting Statement, Enclosure 11.4, shall be completed and mailed.

FIGURE 15. Example of ORDALT instruction (text) – Continued.

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13.1 Preparatory Procedures.**13.1.1** Position gun mount components as follows:

- Both transfer trays raised
- Both cradles lowered
- Rammer retracted

13.2 Safety Precautions.**13.2.1** Stow mount with gun at 2,000 minutes elevation by securing elevation securing pin.**13.2.2** Secure power to the mount by positioning control switches as follows:

<u>SWITCH</u>	<u>POSITION</u>	<u>LOCATION</u>
Power Transfer Device	OFF	Adjacent to Carrier Room
SMX15	SAFE	EP1 Panel
SMX16	SAFE	EP1 Panel
SMX22	OFF	EP1 Panel
SMZ4	SAFE	EP2 Panel

WARNING: Remove and retain SMX15, SMX16, and SMZ4 switch handles and attach tag "DO NOT OPERATE" to EP1 and EP2 Panels.

13.3 Lower Empty Case Tray.**13.3.1** Lash and secure empty case tray using straps, rope, or other suitable material.

13.3.2 Working from gun pocket area, reach into the slide area and manually release the empty case tray latch.

13.3.3 Lower empty case tray under its own weight, using straps or other suitable materials. Unlash empty case tray and remove straps.

13.4 Disassemble Right Hand (RH) Transfer Tray.

13.4.1 At shutter operating mechanism, remove external retaining ring XXX400-0006A, and headless grooved pin XXX783-501 from cam lever XXX178-7 (see Figure 1*). Remove external retaining ring XXX400-0007A and headless grooved pin XXX783-619 from cam lever XXX178-7. Retain pins and discard rings. Remove and retain cam lever XXX178-7 from transfer tray.

FIGURE 15. Example of ORDALT instruction (text) – Continued.

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13.4.2 Reference Drawing XXX719. Remove external retaining ring XXX400-0005A and headless grooved pin XXX783-401 from connecting link XXX283-7 to separate tray from interlock mechanism piston (see Figure 2*). Push plunger XXX285-1 into valve block. Retain pin and discard ring.

13.4.3 Remove external retaining ring XXX400-0005A and headed grooved pin XXX390 from transfer tray. See Figure 3*. Using tee wrench XXX274-4, remove eccentric link pin XXX323-1 and shaft sleeve XXX706 to separate connecting link XXX629 from transfer tray. Retain pin and discard ring, eccentric link pin, and shaft sleeve.

NOTE: Eccentric pin and shaft sleeve are removed through the slide tailgate.

13.4.4 Lay transfer tray back against cradle guide arc.

13.4.5 Secure transfer tray to cradle guide arc support with available line. Discard eccentric link pin and shaft sleeve removed in 14.4.3. Retain other parts.

13.5 Disconnect Operating Piston XXX215-1. See Figure 4* and reference Drawing XXX661 Sheet 3.

13.5.1 Loosen star washer XXX485.

13.5.2 To disconnect the operating piston XXX215-1 from the operating link, it is necessary to turn the piston from below. Working from the gun pocket area, turn the operating piston with an appropriate size screwdriver (there is a slot in the bottom of the piston), while another worker secures jam nut 43-N-486 with an open-end wrench. Continue turning until the operating piston and operating link are disconnected.

13.6 Installation Adjustable Piston Stops.

CAUTION: Check the inner bore of sleeve retainer XXX550 (Kit Item 2) for sharp edges or wire edges at the point where the internal threads meet the bore. If a sharp edge is found, smooth it with sandpaper or emery cloth, and clean the part of grit and dust before installation. Failure to smooth a sharp edge may result in O-ring damage, causing leakage.

13.6.1 Before removing existing operating piston assembly for installation of new adjustable piston stop, preassemble kit items as follows:

FIGURE 15. Example of ORDALT instruction (text) – Continued.

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13.6.1.1 (M102) Insert O-ring preformed packing MS28775-277 (Kit Item 7) into O-ring groove in sleeve retainer XXX550 (Kit Item 2).

13.6.1.2 (M103) Insert O-ring preformed packing MS28775-224 (Kit Item 8) into O-ring groove in adjustable piston retainer XXX551 (Kit Item 3).

13.6.1.3 (M104) Insert U-cup seal preformed packing XXX512-96 (Kit Item 6) into adjustable piston retainer XXX551 (Kit Item 3), using procedure shown on Figure 5*.

NOTE: The cup side of U-cup seal must face fluid reservoir (piston cavity).

13.6.4.1 (M105) Insert ring wiper seal XXX513-17 (Kit Item 5) into adjustable piston retainer XXX551 (Kit Item 3) (see Drawing XXX661, Sheet 3).

CAUTION: Take care that the operating piston and piston sleeve are not allowed to fall out of the valve block during disassembly.

13.6.2 Reference Drawing XXX661, Sheet 3 and Figures 4* and 6*. Work from gun pocket area.

13.6.2.1 Remove and retain cap screw XXX677-70 and nutlock (key) XXX273-7.

13.6.2.2 Remove locknut XXX777, using spanner wrench XXX996, (Kit Item 13). Discard locknut.

13.6.2.3 Remove wiper rod XXX513-17 by pushing down on the piston from above and turning from below until the rod wiper is forced out of the bottom. Discard wiper rod.

13.6.2.4 Remove sleeve retainer XXX775 from the valve block. Make sure that U-cup seal XXX512-96 and O-ring preformed packing AN6230-5 have been removed along with a sleeve retainer. If not, remove them from the valve block and discard (Rags or a bucket may be used to catch any hydraulic fluid that leaks out during this process). Discard sleeve retainer, U-cup seal, and O-ring gasket.

13.6.2.5 (M106) Thread sleeve retainer XXX550 (Kit Item 2) into the valve block, using spanner wrench XXX996 (Kit Item 13) and tighten.

13.6.2.6 Thread adjustable piston retainer XXX551 (Kit Item 3) into sleeve retainer XXX550 (Kit Item 2). Do not tighten. Do not install locking keys.

13.7 Reconnect Operating Piston.

FIGURE 15. Example of ORDALT instruction (text) – Continued.

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13.7.1 Align the operating piston link with the top of the operating piston. Working from the gun pocket, use an appropriate size screwdriver to turn the piston. Continue to turn the piston until the piston and operating piston link are reconnected and the piston bottoms out the cylinder.

13.8 Install Concentric Link Pin.

13.8.1 Screw tee wrench XXX274-4 into the end of concentric link pin XXX556 (Kit Item 4).

13.8.2 Reference Drawing XXX659, Sheet 3. Unlash transfer tray from cradle guide arc support and rotate it inboard to a near vertical position. Insert concentric link pin XXX556 (Kit Item 4) (on end of tee wrench) through access hole in slide tailgate and into the transfer tray and connecting link.

13.8.3 (M107) Turn concentric link pin XXX556 (Kit Item 4) until the hole for the lock pin aligns with the mating hole in transfer tray. Remove tee wrench. Insert lock pin XXX390 from inboard side and secure lock pin XXX390 by installing external retaining ring XXX400-0005A (Kit Item 10) on outboard side of pin.

13.9 Transfer Tray Fire Position Adjustment. Reference Drawing XXX976, Sheet 3.

13.9.1 Position transfer tray at FIRE position and secure it by external means (straps or other suitable material). Operating piston should be at end of stroke.

13.9.2 (M108) Insert dummy round into transfer tray and close clamps. Manually extend fuze setter to contact the bottom of the projectile fuze ogive. At this point, there should be approximately equal clearances, inboard and outboard, between projectile fuze and fuze setter. If the round is not aligned as described, adjust by turning the operating piston from below with appropriate screwdriver. Tighten piston jam nut 43-N-486. Do not secure star washer XXX248-5.

13.9.3 (M109) Reference Drawing XXX661, Sheet 1. Loosen latch bar guide plate XXX280-5 by removing cap screw XXX202-C-121. Loosen latch bar locknut MS19068-04 and key washer MS19070-042. Rotate latch bar XXX272-2 to attain a clearance of .015 to .030 inches, as shown in Drawing XXX976, Sheet 23. Check this clearance with thickness feeler gauges. If this measurement is within allowable limits, secure latch bar guide plate XXX280-5 with cap screw XXX207-C-121.

13.9.4 Reference Drawing XXX976, Sheet 23. If clearance cannot be obtained by rotating latch bar, then secure latch bar guide plate XXX280-5 and adjust eccentric bushing XXX170-2 to suit.

FIGURE 15. Example of ORDALT instruction (text) – Continued.

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NOTE: One spline on eccentric bushing changes position approximately .007 inches.

13.9.5 (M110) Tighten latch bar locknut MS19068-042. Do not secure keywasher MS19070-042. Recheck clearance. Remove round from transfer tray.

13.10 Transfer Tray RAM Position Adjustment. Reference Drawing XXX976, Sheet 23.

13.10.1 Lower transfer tray to RAM position manually.

13.10.2 (M111) Adjust to breech guide projectile shelf. Turn adjustable piston retainer XXX551 (Kit Item 3) from below with spanner wrench XXX996 (Kit Item 13) to adjust the clearance at (V) to .005 to .062 inches, as shown on reference drawing.

13.10.3 (M112) Adjust to attain a clearance of .015 to .030 inches, at latch bar as shown on reference Drawing XXX976, by adjusting the eccentric bushing. Do not rotate latch bar.

NOTE: One spline on eccentric bushing equals approximately .007 inches.

13.10.4 (M113) Recheck clearance at FIRE position by raising and latching transfer tray. Continue adjustments until clearances are within the stated limits at both FIRE and RAM positions. When these conditions are met, tighten operating piston jam nut 43-N-486, secure starwasher XXX248-5 on operating piston, tighten latch bar locknut MS19068-04 and secure keywasher MS19070-042.

13.11 (M114) Secure Sleeve Retainer and Piston Retainer. Reference Drawing XXX661, Sheet 3.

13.11.1 (M115) Secure sleeve retainer XXX550 (Kit Item 2) to valve block with locking key (nutlock) XXX273-7 and cap screw XXX677-70.

13.11.2 (M116) Secure adjustable piston retainer XXX551 (Kit Item 3) to sleeve retainer XXX550 (Kit Item 2) with lock key XXX840 (Kit Item 1) and $\frac{3}{8}$ cap screw XXX207-C-059 (Kit Item 9).

13.12 Reconnect Interlock Mechanism and Shutter Linkage. See Figures 1* and 2* and Drawing XXX719.

13.12.1 Carefully pull up on interlock mechanism plunger XXX285-1. Align hole in connecting link XXX288-7 with hole in lug on transfer tray.

FIGURE 15. Example of ORDALT instruction (text) – Continued.

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13.12.2 (M117) Insert pin XXX783-401 to join connecting link XXX288-7 to lug. Install external retaining ring XXX400-0005A (Kit Item 10) and secure pin. Use pliers XXX792. See Figure 2* and Drawing XXX719.

13.12.3 (M118) See Figure 1*. Align hole in cam lever XXX178-7 with mating hole in transfer tray and insert headless, grooved pin XXX783-619 to secure cam lever XXX178-7 to transfer tray. Install external retaining ring XXX400-0007A (Kit Item 11) on pin XXX703-619 to secure it. Install headless grooved pin XXX783-501. Install external retaining ring XXX400-0006A (Kit Item 13) on pin XXX783-501 to secure it.

13.13 Left Hand (LH) Transfer Tray.

13.13.1 Repeat procedure in paragraphs 13.4.1 to 13.12.3 for LH transfer tray.

13.14 Final Procedures.

13.14.1 (M119) Move empty case tray to appropriate position and latch it in place. Return gun to operational status. Lite off upper accumulator system and cycle transfer trays. Shut upper accumulator system off. Check area affected by this ORDALT for leaks.

13.14.2 Conduct installation and operational tests in accordance with applicable procedures.

13.14.3 Successful completion of paragraphs 13.1 through 13.14.2 and 14.1 completes the work required by this ORDALT.

13.15 Quality Assurance Provisions.

13.15.1 Proper installation of the ORDALT shall be verified in accordance with the following classifications of characteristics (CC). Characteristics which cannot be verified on the completed ORDALT shall be verified by the local Government QA representative as an in-process inspection. All defective characteristics shall be rejected. For definition of CCs, see DOD-STD-2101.

FIGURE 15. Example of ORDALT instruction (text) – Continued.

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CLASSIFICATION OF CHARACTERISTICS (CC)

<u>CLASSIFICATION CODES</u>	<u>QUALITY CHARACTERISTICS</u>
M101	Inner bore of sleeve retainer, free of sharp edges
M102	O-ring installed in sleeve retainer
M103	O-ring installed in piston retainer
M104	U-cup seal inserted per Figure 5 procedure
M105	Wiper ring seal installed
M106	Sleeve retainer tightened
M107	Lock pin secured
M108	Equal clearance between fuze and fuze setter and piston jam nut tightened
M109	Latch bar adjusted for .015- to .030-inch clearance and latch bar guide plate secured
M110	Latch bar locknut tightened
M111	Breech guide projectile shelf adjusted for clearance of .005 to .062 inch
M112	Eccentric bushing adjusted to obtain .015- to .030-inch clearance at latch bar
M113	Clearance at both FIRE and RAM positions in limits and hardware secured
M114	Sleeve retainer and piston retainer secured
M115	Sleeve retainer secured to valve block
M116	Piston retainer secured to sleeve retainer
M117	External retaining ring XXX400-005A installed
M118	External retaining rings XXX400-007A and XXX400-006A
M119	Seals free of leaks
M120	ORDALT number recorded

14. IDENTIFICATION

14.1 (M120) Steel stamp ORDALT NO. XXXX3 on ORDALT Record Plate located on the right-hand side of 5" Slide Assembly Mk 25 Mods 2 and 3.

15. SHIPPING WEIGHT

15.1 ORDALT Kit consists of one package with a volume of approximately one cubic foot and weight of approximately 18 pounds.

FIGURE 15. Example of ORDALT instruction (text) – Continued.

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16. WEIGHT AND MOMENT

16.1 No significant weight and moment change results from this ORDALT, and compensation is not required.

17. UPDATING OPERATIONAL SUPPORT DOCUMENTATION

17.1 The following publication changes are required for system/equipment support following the ORDALT accomplishment.

17.1.1 Technical Manuals.

NAVSEA OP XXXXX Volume X, First Revision, Change No. X, NSN XXXX-LP-XXX-XXXX

NAVSEA OP XXXXX Volume X, First Revision, Change No. X, NSN XXXX-LP-XXX-XXXX

NAVSEA OP XXXXX Volume X, First Revision, Change No. X, NSN XXXX-LP-XXX-XXXX

17.1.2 Maintenance Index Pages (MIP)

MIP Code:

MIP Code:

MIP Code:

17.1.3 Maintenance Requirement Cards (MRC)

MRC Code:

MRC Code:

MRC Code:

17.1.4 Allowance Parts List (APL)

APL

APL

APL

FIGURE 15. Example of ORDALT instruction (text) – Continued.

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17.1.4.1 Interim support of this ORDALT is provided by ORDALT APL ORXXXX3001. When all installations are completed, the parent APL listed in 7.1.4 will be updated per paragraph 12.8.

17.1.5 Equipment Identification Codes (EIC)

17.1.5.1 The following EICs shall be used when reporting ORDALT accomplishment on OPNAV Form 4790/CK:

MOD 9:GF1XXXX5" Slide Assy MK 25 MOD 2

MOD 10:GB1XXXX5" Slide Assy MK 25 MOD 3

17.1.6 ORDALT and SHIPALT Instructions.

17.1.6.1 None.

17.1.7 Technical Repair Standards (TRS).

17.1.7.1 None.

17.1.8 Other Data.

17.1.8.1 None.

17.2 Documentation Changes Source.

17.2.1 Technical manual changes or revisions (final or preliminary) are provided in or along with the ORDALT kit. Classified changes are not to be shipped in the kit but handled in accordance with DoD 5220.22-M. Additional copies of TMs may be obtained/downloaded from the Technical Data Management Information System (TDMIS) website (<https://mercury.tdmis.navy.mil>) or via the Naval Logistics Library website maintained by NAVSUP. MIPs and MRCs shall be provided by the Naval Sea Support Center when the ORDALT is installed. Automatic distribution of other maintenance documentation such as APLs/AELs, COSAL, SPETERLs will be accomplished by submission of OPNAV 4790/CK as set forth in paragraph 18. Material shall not be inserted into the manual or card deck until the ORDALT is accomplished.

FIGURE 15. Example of ORDALT instruction (text) – Continued.

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18. REPORT OF COMPLETION/LOG ENTRY

18.1 The EICs listed in paragraph 17.1.5.1 shall be used when reporting ORDALT completion.

18.2 The ORDALT identification plate shall be stamped per paragraph 14.1 upon completion of this ORDALT.

18.3 ORDALT accomplishment shall be reported to the appropriate ISEA and by submission of Ship's Configuration Change Form, OPNAV Form 4790/CK as prescribed by OPNAVINST 4790.4.

18.4 Accomplishment shall be reported by entry into the configuration change screen display if the activity is using Shipboard Non-tactical ADP Program (SNAP) Computer.

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FIGURE 15. Example of ORDALT instruction (text) – Continued.

ENCLOSURE 11.1 (Sheet 1 of 2)

SHIP/SYSTEM/EQUIPMENT TRANSFER TRAY ASSEMBLY 5" SLIDE ASSEMBLY MK 25 MODS 2 AND 3 5"/54 CALIBER GUN MOUNT MK 50 MODS 9 AND 10			ORDALT INSTALLATION MILESTONE CHART															
			MILESTONES															
LINE	ACTION RESPONSE	ACTION MILESTONES	DAY 1 HOURS								DAY 2 HOURS							
			1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
	S/L	Position gun mount components IAW para 13.1.1	■															
	S/L	Secure mount IAW para 13.2.1	■															
	S/L	Secure power IAW para 13.2.2		■														
	SEACEN	Verify adjustable piston has not been installed (para 6.1.1)		■														
	SEACEN	Verify concentric link pin has not been installed (para 6.1.2)			■													
	SEACEN	Disassemble lower empty case tray IAW para 13.3			■													
	SEACEN	Disassemble right transfer tray IAW para 13.4				■												
	SEACEN	Disconnect operating piston IAW para 13.5				■												
	SEACEN	NOONTIME BREAK					■	■										
	SEACEN	Install adjustable piston stops IAW para 13.6						■	■									
	SEACEN	Reconnect operating piston IAW para 13.7							■	■								
	SEACEN	Install concentric link pin IAW para 13.8								■								
	SEACEN	Adjust transfer tray in FIRE position IAW para 13.9								■	■							
	SEACEN	Adjust transfer tray in RAM position IAW para 13.10									■							
	SEACEN	Secure sleeve retainer and piston retainer IAW para 13.11										■						
	SEACEN	Reconnect interlock mechanism and shutter linkage IAW 13.12										■	■					
	SEACEN	Install left transfer tray kit IAW para 13.13																
	SEACEN	Disassemble left transfer tray IAW para 13.4											■					
	SEACEN	Disconnect operating piston IAW para 13.5												■				
	SEACEN	Disconnect adjustable piston stops IAW para 13.6												■	■			
	SEACEN	NOONTIME BREAK												■	■			
	SEACEN	Install adjustable piston stops IAW para 13.6 (Continued)													■	■		
	SEACEN	Reconnect operating piston IAW para 13.7														■		
	SEACEN	Reconnect concentric link pin IAW para 13.8															■	
	SEACEN	Adjust transfer tray in FIRE position IAW para 13.9															■	

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FIGURE 15. Example of ORDALT instruction (text) – Continued.

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ENCLOSURE 11.1 (Sheet 2 of 2)

SHIP/SYSTEM/EQUIPMENT			ORDALT INSTALLATION MILESTONE CHART															
TRANSFER TRAY ASSEMBLY 3" SLIDE ASSEMBLY MK 25 MODS 2 AND 3 5"/54 CALIBER GUN MOUNT MK 50 MODS 9 AND 10			MILESTONES															
			DAY 1 HOURS								DAY 2 HOURS							
LINE	ACTION RESPONSE	ACTION MILESTONES	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
	SEACEN	Adjust transfer tray in RAM position IAW para 13.10								■								
	SEACEN	Secure sleeve retainer and piston retainer IAW para 13.11								■								
	SEACEN	Reconnect interlock mechanism and shutter linkage IAW 13.12									■	■						
	S/F	Energize system IAW para 13.14.1										■						
	SEACEN	Conduct installation tests IAW 13.14.2										■		■				
	S/F	Conduct operational test IAW 13.14.2												■	■			
	S/F	Submit OPNAV 4790/CK													■			

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FIGURE 15. Example of ORDALT instruction (text) – Continued.

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ORDALT XXXX3

ENCLOSURE 11.2

DRAWINGS

(AS LISTED IN PARAGRAPH 10.2)

FIGURE 15. Example of ORDALT instruction (text) – Continued.

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ORDALT XXXX3
ENCLOSURE 11.3 (Sheet 1 of 3)

SUPPLY/MATERIAL SUPPORT DATA**1. Title: Transfer Tray Assembly**

5" Slide Assembly MK 25 MODS 2 and 3

5"/54 Caliber Gun Mount MK 50 MODS 9 and 10

2. Purpose: This enclosure should be forwarded to the Supply Officer. It provides information especially for the Supply Department so that onboard COSAL records may be corrected and updated to reflect the new configuration of this equipment. Upon receipt of this enclosure by the Supply Department, coordination between Supply and Weapons personnel should immediately take place to support the change.

3. Supply/Material Support Data (extracted from basic text).**12.8 Allowance changes.**

NOTE: The item(s) listed in paragraph 12.8.1 and 12.8.2 will appear in ORDALT APL ORXXXX30001 and ORDALT AEL ORXXXX3001 as add item(s). The item(s) listed in paragraphs 12.8.3 will appear on the ORDALT APL ORXXXX30001 as delete item(s). After the ORDALT is accomplished on all applicable equipment, the item(s) in paragraph 12.8.1 will be added to the equipment parent APL XXXXXX0005, and the item(s) in paragraph 12.8.3 will be deleted from the equipment parent APL. The item(s) in paragraph 12.8.2 will be added to the equipment parent AEL XXXXXX0005.

12.8.1 Allowance Parts List Parts Addition/Allowance Increase.

12.8.1.1 The following items/quantities will be added to the present Allowance Parts List (APL) after equipment is altered:

APL ORXXXX3001

<u>REFERENCE DESIGNATION</u>	<u>CAGE CODE/PART NO.</u>	<u>NOMENCLATURE/ DESCRIPTION</u>	<u>NATIONAL STOCK NO.</u>	<u>SM&R CODE</u>	<u>PARTS POPULATION ADDED</u>	<u>ALLOWANCE QUANTITY INCREASE</u>
	(10001) XXX207-C-059	Cap screw #10-24X ⅜	5305-01- 029-XXX6	PA5ZZ	2	0
	(10001) XXX400-0005A	Ring, Retaining, External	5365-01- 017-XXX1	PA5ZZ	2	0

FIGURE 15. Example of ORDALT instruction (text) – Continued.

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ORDALT XXXX3
ENCLOSURE 11.3 (Sheet 2 of 3)

<u>REFERENCE DESIGNATION</u>	<u>CAGE CODE/PART NO.</u>	<u>NOMENCLATURE/ DESCRIPTION</u>	<u>NATIONAL STOCK NO.</u>	<u>SM&R CODE</u>	<u>PARTS POPULATION ADDED</u>	<u>ALLOWANCE QUANTITY INCREASE</u>
	(10001) XXX400-0006A	Ring, Retaining, External	5365-01- 020-XXX8	PA5ZZ	2	0
	(10001) XXX400-0007A	Ring, Retaining, External	5365-01- 017-XXX1	PA5ZZ	2	0
	(10001) XXX512-96	Packing, Preformed (U-Cup Seal)	5330-00- 485-XXX8	PA5ZZ	2	2**
	(10001) XXX513-12	Wiper, Ring	1020-00- 185-XXX2	PA5ZZ	2	2**
	(53711) XXX550	Retainer, Sleeve	1440-LL- HDN-XXX7	PA5ZZ	2	0
	(53711) XXX551	Retainer, Piston, Adjustable	1440-LL- HDN-XXX7	PA5ZZ	2	0
	(53711) XXX556	Pin, Link, Concentric	1440-LL- XXX5	PA5ZZ	2	0
	(53711) XXX840	Key, Lock	1440-LL- HDN-XXX4	PA5ZZ	2	0
	MS28775-224	Packing, Preformed (O-Ring)	5330-00- 541-3407	PA5ZZ	2	0
	MS28775-227	Packing, Preformed (O-Ring)	5330-00- 576-9731	PA5ZZ	2	2**

** Designates initial spares packaged in the ORDALT kit.

12.8.2 Allowance Equipage List Parts Addition/Allowance Increase

12.8.2.1 The following items/quantities will be added to the present Allowance Equipage List (AEL) after equipment is altered:

AEL ORXXXX30001

<u>REFERENCE DESIGNATION</u>	<u>CAGE CODE/PART NO.</u>	<u>NOMENCLATURE/ DESCRIPTION</u>	<u>NATIONAL STOCK NO.</u>	<u>SM&R CODE</u>	<u>PARTS POPULATION ADDED</u>	<u>ALLOWANCE QUANTITY INCREASE</u>
	(53711) XXX996	Wrench, Spanner (Special)	5120-LL- HDN-XXX3	PA5ZZ	1	1

12.8.3 Allowance Parts List Deletion/Allowance Decrease.FIGURE 15. Example of ORDALT instruction (text) – Continued.

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ENCLOSURE 11.3 (Sheet 3 of 3)

12.8.3.1 The following items/quantities will be deleted from the present Allowance Parts List (APL) after the equipment is altered:

<u>REFERENCE DESIGNATION</u>	<u>CAGE CODE/PART NO.</u>	<u>NOMENCLATURE/ DESCRIPTION</u>	<u>NATIONAL STOCK NO.</u>	<u>PARTS POPULATION ADDED</u>	<u>ALLOWANCE QUANTITY INCREASE</u>
	(10001) XXX323-1	Pin, Link, Eccentric	1020-00-026- XXX3	2	0
	(10001) XXX701	Sleeve, Shaft	1020-00-021- XXX8	2	0
	(10001) XXX400-0005A	Ring, Retaining, External	5365-01-017- XXX1	2	0
	(10001) XXX400-0006A	Ring, Retaining, External	5365-01-020- XXX8	2	0
	(10001) XXX513-17	Rod, Wiper	1020-00-185- XXX2	2	0
	(10001) XXX512-96	Packing, Preformed (U-Cup Seal)	5330-00-485- XXX8	2	2
	(10001) XXX775	Retainer, Sleeve		2	0
	(10001) XXX777	Locknut		2	0
	AN6230-5	Packing, Preformed (O-Ring)	5330-00-194- XXX1	2	2

12.8.4 Allowance Equipage List Parts Deletion/Allowance Decrease.

12.8.4.1 None.

FIGURE 15. Example of ORDALT instruction (text) – Continued.

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ORDALT XXXX3
ENCLOSURE 11.4

ORDALT INSTALLATION PROBLEM REPORTING STATEMENT		
Instructions: 1. Use this form to report deficiencies in ORDALT Instructions or kits. 2. After completing, fold on dotted line, staple, and mail.		
ORDALT NO.	TITLE	
REV/CHANGE NO.	SYSTEM	
TEXT/INSTALLATION PROBLEMS/RECOMMENDED CHANGES		
PAGE NO.	PARAGRAPH/FIG/TABLE	ERROR/CHANGE
		(Continue on separate sheet)
KIT/PROBLEMS/RECOMMENDED CHANGES		
ITEM NO.	PART NO.	PROBLEM
		(Continue on separate sheet)
PROBLEM CONSIDERED:	CRITICAL/ROUTINE	REQUIRES CHANGE
EXPLAIN:		INFORMATION ONLY
	YES/NO	YES
		(Continue on separate sheet)
ORIGINATOR	TITLE	DATE
AGENCY/CONTRACTOR/SHIP	MAILING ADDRESS	TELEPHONE A/V COM

(* Figures are not shown in this example. See figure 14 of this standard.)

FIGURE 15. Example of ORDALT instruction (text) – Continued.

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CONCLUDING MATERIAL

Preparing activity:
Navy – OS
(Project SESS-2019-011)

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at <https://assist.dla.mil>.