UNITED STATES MARINE CORPS
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I MARINE EXPEDITIONARY FORCE ORDER P5230.20

From: Commanding General
To: Distribution List

Subj: COMMERCIAL-OFF-THE-SHELF (COTS) AUTOMATED DATA PROCESSING EQUIPMENT (ADPE) MAINTENANCE POLICY AND PROCEDURES

Ref: (a) I MEFO 4400.5
(b) MCO P4400.150
(c) SPN MC3-17-95
(d) TM 4700-15/1
(e) UM 4400.123
(f) MCO P4790.2

Encl: (1) Locator Sheet

1. Purpose. To establish a standardized COTS/ADPE maintenance support policy for units within the I Marine Expeditionary Force.

2. Background. The rapidly growing base of personal computers coupled with fast paced changes in technology raises concerns relative to their overall supportability. Uncoordinated discretionary spending within the operating force has resulted in a multitude of computer hardware and peripheral variants. This equipment is supported with local maintenance funds via commercial contracts or improvised organic maintenance support. Additionally, the majority of computers procured by local commanders come with their own limited warranty and vendor support. Although perceived as less expensive and convenient, vendor support may not sustain a commander's mission in a combat environment. Though COTS/ADPE assets have been designated C4I equipment, thereby requiring that their maintenance be performed in accordance with established maintenance and supply procedures, there currently exists a lack of well defined directives relating to this type of equipment. Logistical support for these assets does not readily exist through standard supply channels and hinders our ability to do maintenance as far forward as possible. Because forward support of these assets is critical to each commanders ability to command and control in today's environment, this policy is promulgated to standardized COTS/ADPE maintenance procedures in a garrison as well as tactical environment.

3. Applicability. The policies and procedures contained in this directive apply to the acquisition, maintenance and management of

all locally procured COTS/ADPE equipment. Locally procured COTS/ADPE will be identified and accounted for under Type II, "H8XXX" Table of Authorized Material Control Number (TAMCN) or locally assigned TAMCN(s) if equipment configuration does not fall within current Type II criteria. Per reference (a), this directive does not pertain to Type I "A" TAMCN(s) that are fielded through the Marine Corps acquisition process. These items will be supported and managed by directives published by Marine Corps Systems Command under the equipment's formal fielding process.

4. Action. The following COTS/ADPE maintenance polices and procedures will be adhered to as minimum standards for I MEF units.

a. All COTS/ADPE acquisitions will be staffed and endorsed by the MEF AC/S, G-6.

b. All COTS/ADPE related items and components will be requisitioned, received and accounted for per reference (b) and this Directive. Detailed Limited Technical Inspections (LTI) by qualified personnel will be done upon receipt of equipment to gaining units to ensure completeness and operability. If equipment is found to be incomplete or inoperable, it should be returned to the vendor for repair and/or replacement. The LTI will become a permanent part of the equipment's record jacket. Supply personnel must ensure that unit Table of Equipment (T/Es) reflect an approved Type II and/or local TAMCN allowance. The majority of acquisitions should fall within the Type II, "H8XXX" TAMCN structure established by HQMC(CODE LPP). Acquisitions that do not fall within established structure require a request to be submitted, via the 1st Force Service Support Group (FSSG), AC/S, G-3 for assignment or identification of a local TAMCN and Local Stock Number (LSN) per reference (c). The 1st FSSG is I MEF's agency for the assignment and management of all local TAMCN(s) and LSN(s). This responsibility includes maintaining a viable program for the assignment of local TAMCN(s) and LSN(s) that do not duplicate themselves and meet the needs of each commodity and supply user.

c. Maintenance support for COTS/ADPE will be the responsibility of the owning unit and performed within the echelon of maintenance authorized. The unit's current Table of Organization (T/O) mission statement will state the authorized level of maintenance.

d. COTS/ADPE maintenance support will be carried out under the supervision and guidance of the unit's communications-electronics maintenance element, under direction from the unit's communication commodity section. COTS/ADPE maintenance support will be performed by qualified maintenance personnel with MOS 2818/2821 or 4066. It has been determined that allowing MOS 4066 to perform organizational support under the supervision and guidance of the unit's communications-electronics maintenance element will effectively

increase organizational support efforts in both garrison and deployed situations, therefore it is authorized. Based on MOS availability, commanders can make a determination on cross training of computer support personnel. These individuals must be properly trained and qualified to perform tasks under supervision and guidance of the units communications-electronics maintenance element.

e. Equipment records are required and will be maintained on all COTS/ADPE assets in the same manner as other communications-electronics equipment. Suites of equipment can be maintained and accounted for through the use of one record jacket with the Operator Maintenance Discrepancy Report (OMDR) reflecting the serial number of individual components. In addition to what is required per reference (d), if applicable, each record will have annotations concerning the item's warranty provider and expiration date. To preclude unauthorized repair that may void the warranty, commanders should designate a warranty repair coordinator who ensures that a current list of warranties, vendors and contract maintenance service providers exists for COTS/ADPE assets within their unit. The coordinator and warranty functions should reside at the 2d echelon maintenance level.

f. Warranty repair services, if applicable, will be used to their fullest extent. Commanders must ensure that units do not void an equipment's warranty through unauthorized maintenance. However, if the immediate repair is deemed critical to the mission, commanders may authorize repairs based on local directives. This action should be an exception and should only take place in a field environment as it is not cost effective to void warranty services on a recurring basis. Commanders should ensure that preventive and corrective maintenance procedures are performed and in accordance with the warranty and contractor provisions for that equipment. Maintenance personnel will be aware and exercise care concerning the COTS/ADPE(s) warranty contract with regards to what is authorized and/or unauthorized before any repair is initiated.

g. The local procurement and maintaining of COTS/ADPE assets requires additional supply support planning. Unit commanders must budget and fund for COTS/ADPE maintenance requirements. Parts requisitioning usually takes place outside the standard supply channels and is done through the use of credit cards and/or open purchase. The use of credit cards to procure parts and components for COTS/ADPE is an individual command decision. The use of open purchase is done via the Base Purchasing and Contracting Office. Both avenues afford the commander an ability to requisition components or replacement parts in a timely manner. A requirement exists for stockage of parts through the use of Pre-Expend Bins (PEB) and/or insurance type items, so that restoration of service

can be effective and immediate. Units are encouraged to review reference (a) pertaining to these consumer level operating stock programs and initiate their use.

h. COTS/ADPE equipment hardware upgrades (internal to equipment) are considered a modification action and will not be performed without authorization from the respective command's AC/S, G-6. Some upgrades may result during the performance of routine maintenance action, thereby precluding a preapproved authorization. Because these actions are usually considered cost effective and in the best interest of the government, it is up to the individual commander to publish policy on these instances. In either case, users and supply personnel must be aware that any hardware upgrade has the potential to reclassify the COTS/ADPE asset as a different TAMCN. If this happens, appropriate action must be initiated to supply records. Commanders who maintain a 3d echelon maintenance capability and rate personnel with MOS 2818/2821 and 4066 are authorized to fabricate COTS/ADPE suites from individual components. Building these type of suites is not only cost effective to the commander, but allows flexibility in fulfilling a specific requirement. Commanders must ensure that these suites are not proprietary in nature and meet the standards of current technology. All hardware upgrades will be performed by the unit's communications-electronics maintenance element utilizing the Equipment Repair Order (ERO) NAVMC 10245 for documentation and tracking per reference (d).

i. Reference (e) gives detailed guidance on the Source, Maintenance and Recoverability Code (SMRC). The "PF" indicates support equipment which will not be stocked, but which will be centrally procured on demand; "O" indicates Organizational Level (1st & 2d echelon) as the lowest maintenance level authorized to remove/replace and use the end item; "F" indicates Intermediate Level (3d echelon) as the lowest maintenance level which can perform complete repair of the end item; and the second "F" indicates recoverability and disposal at the Intermediate Level (3d echelon). COTS/ADPE Type II "H8XXX" TAMCN(s) and/or locally assigned COTS/ADPE TAMCN end items within I MEF will be cataloged "PFOFF" as the SMRC items. All component peripherals (i.e. keyboards, mouses, cables, repairable and nonrepairable circuit cards, drive assemblies, memory chips, etc.) will be assigned SMR codes of either PAOOZ, PGOOZ or PGOFZ based upon stockage, item cost and level necessary to effect complete repair of the asset. In all cases of these component peripherals, the "Z" recoverability code indicates disposal at the organizational level once determination has been made that it is nonrepairable or uneconomical to repair. Chapter two of this directive will serve as the MEF guideline for SMRC(s) on equipment, echelons of maintenance and associated tasks performed by qualified personnel within those echelons.

j. In accordance with reference (f) and this Directive, COTS/ADPE maintenance will be carried out by the organizational unit to the fullest extent possible based upon available trained personnel, tools, test equipment, parts and publications. Repairs beyond the scope and means of the 2d echelon level will be evacuated to the organizational unit's supporting 3d echelon maintenance level, based on T/O mission statement. If the 2d echelon unit does not have a supporting 3d echelon maintenance level, follow on maintenance will be provided by the Intermediate Maintenance Activity (IMA) provided by the 1st FSSG. Electronic Maintenance Company (ELMACO), 1st Maintenance Battalion is the designated COTS/ADPE maintenance facility for I MEF. Based upon location, IMA COTS/ADPE capabilities exist within the Combat Service Support Group-1 (CSSG-1) at MCAGCC, 29 Palms and minimum capabilities deploy within each MEU Service Support Group (MSSG) attached to a MEU. It is essential that units perform all functions within their authorized echelon of maintenance before evacuating to the next level of repair.

k. Recoverability condition coding and disposal of unserviceable COTS/ADPE, "H8XXX" TAMCN(s) and/or locally assigned COTS/ADPE TAMCN end items will be the responsibility of the supporting 3d echelon communications-electronics maintenance element. All disposal action will be supported by a Letter of Unserviceable Property (LUP) and Defense Reutilization Marketing Office (DRMO) documentation. These actions will be accomplished at the owning unit's 3d echelon maintenance element, if applicable, to the fullest extent possible to ensure the respective IMA does not inherit and become the facilitator of all nonrepairable COTS/ADPE assets. Recoverability and disposal of serviceable excess or obsolete COTS/ADPE, "H8XXX" TAMCN(s) and/or locally assigned COTS/ADPE TAMCN end items will still remain an organizational unit supply function.

5. Recommendation. Recommendations concerning the contents of this Directive are invited. Such recommendations should be forwarded to the Commanding General, I MEF (Attn: AC/S, G-6) via the appropriate chain of command.

6. Certification. Reviewed and approved this date.

A. W. SPITTLER
Chief of Staff

DISTRIBUTION: Lists I/II

LOCATOR SHEET

Subj: COMMERCIAL-OFF-THE-SHELF (COTS) AUTOMATED DATA PROCESSING EQUIPMENT (ADPE) MAINTENANCE POLICY AND PROCEDURES

Location: _____

(Indicate location(s) of the copy(ies) of this Manual.)

ENCLOSURE (1)

COTS/ADPE MAINTENANCE POLICY AND PROCEDURES

RECORD OF CHANGES

Log completed change action as indicated.

Change Number	Date of Change	Date Entered	Signature of Person Incorporating Change

COTS/ADPE MAINTENANCE POLICY AND PROCEDURES

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CHAPTER 1

COTS/ADPE LOGISTICS SUPPORT CONCEPT

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COTS/ADPE LOGISTICS SUPPORT CONCEPT

1000. GENERAL. An underlying goal of COTS/ADPE management is to provide common maintenance support for computer equipment regardless of application. Commanders should strive to standardize their COTS/ADPE procurements. Standardization will help to ensure that fiscal and maintenance resources are maximized to their full extent and that a commonality in logistic support is achieved throughout the life cycle of the equipment. Not only should commanders attempt to standardize their COTS/ADPE, they should ensure that neither equipment or its peripherals are proprietary in nature. The most efficient logistic and maintenance procedures will not support proprietary assets in a timely manner. The unit's respective AC/S, G-6 and the Electronics Maintenance Company within the FSSG can provide input on current equipment and vendors that may contain proprietary components. The COTS/ADPE maintenance concept calls for 1st through 4th echelon maintenance support. Use of contractor support will be executed during the system's warranty period at the convenience of the commander. After the expiration of any warranty period, 1st through 4th echelon maintenance will effect repairs in accordance with current maintenance and supply orders, as well as this directive. Some mission essential maintenance and supply procedures have been amplified within this Directive, due to the rapidly changing nature of COTS/ADPE assets and the absence of well defined directives in regards to maintenance and logistic support of locally procured COTS/ADPE. These procedures are focused at providing timely equipment restoration, maximized manpower efficiency and minimized cost while effecting repairs as far forward as possible.

1001. SUPPLY ACCOUNTABILITY. The development, acquisition and provisioning of T/E Type I, "A" TAMCN(s) ADPE systems remains the responsibility of Marine Corps System Command (MARCORSYSCOM). Although the development and acquisition process takes many years to complete, no Type I COTS/ADPE assets will be locally funded and/or procured by I MEF units, unless specifically authorized and directed by MARCORSYSCOM. This is essential for effecting proper program control and responsibility and to preclude any duplication of effort, equipment and costs. Locally procured COTS/ADPE will be accounted for under the established Type II, "H8XXX" TAMCN(s) or the local TAMCN(s) established by 1st FSSG. Supply personnel will ensure all computer assets are identified by either established or local TAMCN(s) and appropriate accounting records are annotated.

1002. USER SUPPORT

1. All user COTS/ADPE malfunctions (software/hardware/network) should be reported to the unit/section Information Systems Coordinator (ISC) for resolution. Quick ISC intervention at the user level can in most cases solve a majority of common occurring COTS/ADPE user type programs and malfunctions. This action will allow users to retain their equipment, thus avoiding the need to evacuate the asset and commit valuable maintenance resources.

2. If the ISC cannot resolve the problem through routine assistance and/or software diagnostics, the ISC will then report the malfunctions to the unit's COTS/ADPE support section. The composition and structure of this section should be established by local policy. As a minimum, this section should consist of qualified personnel with the MOS(s) of 2818/2821 or 4066. Fault isolation and trouble shooting should commence in this section. Based on problems identified the COTS/ADPE asset can then be processed for induction into the maintenance cycle, if required.

3. The COTS/ADPE support concept should provide the user with rapid system restoration through either immediate on-site repair at the user level, in shop repair and return at the user or IMA level or equipment replacement or reassignment at the commander's discretion.

1003. MAINTENANCE SUPPORT. COTS/ADPE procured by the operating force will have maintenance and records completed per reference (d) and (f). In accordance with reference (f), commanders are responsible for the operational readiness of their equipment and appropriately maintaining this equipment within their authorized echelon of maintenance.

1004. SUPPLY SUPPORT. All hardware related supply support programs such as holding pre-expend bins for parts or insurance items for any assets the commander deems critical to their mission, will be a using unit responsibility. Units are encouraged to review and establish these programs per the appropriate supply procedures, criteria, and approval process. Any and all available supply support programs which will enhance the availability and capability to sustain COTS/ADPE readiness should be pursued. Supply support is particularly important in building data bases and authorized support programs that are ready and capable of providing self-sufficient and responsive COTS/ADPE maintenance support during deployments and real world contingencies.

1005. PLANNED OBSOLESCENCE. Fast pace technology in regards to COTS/ADPE has made many assets either unsupportable or inadequate to operate current software programs. Because the majority of COTS/ADPE assets are not supported through the standard supply system, commanders via their maintenance elements are forced to use vendor support or open purchase type support for parts and sometimes labor. Often, parts and components for these assets are not even readily available in the civilian community, leading to an extended maintenance cycle. This action is not conducive to sound maintenance and supporting the user in a timely manner. Not only do aging assets require prohibitive maintenance costs, they also require tremendous manpower resources to research and identify sources of supplies for repair parts. The following criteria will be followed by I MEF units in order to decrease the expenditure of scarce maintenance funds on aging equipment as it progresses through its standard life expectancy of five years. These actions will aid in the attempt to keep COTS/ADPE assets near current technology and will assist in reducing the maintenance cycle time of assets still deemed essential to the MEFs mission requirements.

1. All COTS/ADPE end item standard unit prices will be depreciated annually using an established version of a computer "Blue Book." Depreciation will reduce the monetary expenditure of Corrective Maintenance (CM) funds on antiquated equipment. Furthermore, it will establish a baseline and viable means for the phase-out of aged COTS/ADPE assets. This Directive does not preclude owning units from maintaining COTS/ADPE assets beyond the industry standard of five years, but does provide a mechanism to prevent waste of intermediate maintenance funds and labor on outdated technology. The owning unit can retain the use of their COTS/ADPE assets, however all maintenance actions and funding becomes the responsibility of the owning unit. Commanders should establish local procedures that will identify their COTS/ADPE assets' depreciated value and the unit's action if deemed not cost effective to repair. The products identified from the annual review board addressed below will assist commanders in the determination of their COTS/ADPE assets current value.

2. Washout criteria will still remain at 41 percent of the projected cost to repair. A conscientious decision to effect repair or dispose of COTS/ADPE will be based on the asset's fair market value, computed by the depreciated unit price. Units must ensure that the inducting ERO states if the owning unit wishes to retain the asset once IMA determines the asset exceeds the 41 percent criteria. If the unit requests to retain and the estimated repairs exceed 41 percent, all maintenance action and funding becomes the responsibility of the owning unit.

3. Annually, at the commencement of the fiscal year, 1st FSSG will establish a review board, consisting of representatives from the FSSG AC/S, G-6 customer service section of the SASSY Management Unit (SMU) and personnel from Electronics Maintenance Company. The purpose of this review will be to calculate and establish the specific depreciation of each COTS/ADPE National Stock Number (NSN) and/or Local Stock Number (LSN) resident within I MEF, using commercially available products such as computer "Blue Books." The review board results will be submitted to the SMU Customer Service section for incorporation into the Master Header Information File (MHIF) as the updated standard price for each NSN/LSN reviewed. An FSSG bulletin will also be published listing COTS/ADPE equipment with its adjusted and depreciated value. This bulletin will serve as the source document for commanders to decide a course of action identified in Para 1005.1 above.

CHAPTER 2

COTS/ADPE ECHELONS OF MAINTENANCE AND AUTHORIZED TASKS

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COTS/ADPE ECHELONS OF MAINTENANCE AND AUTHORIZED TASKS

2000. GENERAL. The methodical procedures of communications-electronics maintenance, outlined in references (d) and (f) are the guiding principles for COTS/ADPE maintenance. This chapter will provide additional guidance and details on COTS/ADPE maintenance in order to effect support for COTS/ADPE assets within I MEF. All COTS/ADPE Type II "H8XXX" TAMCN(s) and locally assigned COTS/ADPE TAMCN assets are classified as communications-electronics equipment and due to their highly diverse and technical nature pose unique problems in their supportability. Another factor that directly effects COTS/ADPE supportability is the overwhelming quantities of assets throughout the Marine Corps. The significant challenge is to provide an effective and responsive maintenance support program that is mission oriented to support both the multiple types of COTS/ADPE, as well as the user itself. This directive will establish clearly defined and standardized support criteria where installation, operation, and maintenance should and can be conducted as far forward as possible. This criteria will delineate unit and personnel responsibilities, echelons of maintenance with associated tasks and establish SMRC. Standardization is the key to maximizing effective and responsive COTS/ADPE support to the user whether in garrison or deployed.

1. All COTS/ADPE operational and maintenance support actions will be performed per the established maintenance categories and corresponding echelon of maintenance levels listed below and within the echelon of maintenance authorized per the unit's T/O mission statement.

2. Currently no organizational tool kit to support ADPE and its peripherals exists in the Marine Corps supply system. To support these assets a requirement exists for specific tools, application software, and in some cases General Purpose Test Equipment (GPTE). Until such time as appropriate tools, hardware/software are procured through the formal acquisition process, local commanders can purchase tools and software that will allow maintenance personnel to efficiently troubleshoot and repair COTS/ADPE assets in a timely manner. These tools will be assigned local TAMCNs through the SMU and accounted for on standard supply accounting records per reference (a). An essential component of these tool kits will be an Electrostatic Discharge (ESD) safe workstation. Due to the sensitive nature of today's components, maintenance and access to internal components should not be performed without the ESD safeguards. Failure to properly use ESD procedures may result in immediate or delayed component failure and/or degraded component performance.

2001. APPLICABILITY. The echelons of maintenance and associated tasks listed within this chapter and appendix A apply to both the garrison and tactical Installation, Operation and Management (IOM) of all COTS/ADPE Type II "H8XXX" TAMCN(s) and locally assigned COTS/ADPE TAMCN assets within I MEF. These echelons of maintenance and associated tasks are not applicable to Type I "AXXX" TAMCN(s) or Type II "HXXX" TAMCN(s) that were formally fielded through the Marine Corps acquisitional process in support of Automated Information Systems (AIS) and/or Tactical Data Systems (TDS). These assets will be supported, maintained and managed per the systems User Logistics Support Summary (ULSS) and Technical Manuals (TMs) as published by Marine Corps Logistics Bases, Albany and the equipment manufacturer.

2002. COTS/ADPE ECHELONS OF MAINTENANCE. In the absence of any formalized or published directives, TM(s) or standardized supply lists for COTS/ADPE Type II "H8XXX" TAMCN(s) and locally assigned COTS/ADPE TAMCN assets, it has become necessary for I MEF to establish and publish standards and policy. This policy will identify specific operational tasks, repair tasks, echelon of maintenance and SMRC(s). The echelons of maintenance and associated tasks listed below and in appendix A are promulgated as I MEF standards for COTS/ADPE Echelons of Maintenance (EOM).

1. Organizational Maintenance (1st and 2d EOM)

a. 1st Echelon of Maintenance: Maintenance performed by the incidental user/operator of the equipment. It includes record jacket construction and the proper care, use, operation, cleaning, preservation, minor adjustment, testing and selective replacement of expendable items as may be prescribed in appendix A. Common actions consist of cleaning and removing accumulated dust and dirt from exterior surfaces, changing air filters, tightening cable connections and changing printer ribbon/cartridges. These actions are conducted by the COTS/ADPE operator and are considered Preventive Maintenance (PM). There is no requirement to collect MIMMS/AIS data at first echelon. Maintenance at this level is carried out by using unit personnel of any MOS provided with limited IOM type training. In case of equipment failure, the operator will be responsible for notifying the section or individual within their unit qualified for performing diagnostics and fault isolation type functions. This procedure should be established by local policy. Under no circumstances are user/operators authorized to troubleshoot or open COTS/ADPE assets.

b. 2d Echelon of Maintenance: Maintenance performed by specially trained T/O billeted personnel within the organizational command. These individuals will be responsible for utilizing

the appropriate publications, tools, test equipment diagnostic software and logistic supply support to perform maintenance functions and tasks beyond the capabilities and authorization of first echelon. This echelon of maintenance includes: operator/ maintainer support services; warranty repair coordination and management; contract/vendor support coordination and management; authorized/scheduled maintenance upgrades on COTS/ADPE or their associated Lowest Replacement Units (LRU). Stand alone LRU(s) are defined as individually nomenclatured items that can be found as components of the end item. Common LRU(s) are the Central Processor Unit (CPU), monitor, keyboard, printers and external drives such as CD-ROM and modems. The majority of effort at this EOM will be spent performing equipment fault isolation/diagnosis; repair of readily traceable COTS/ADPE end item and LRU malfunctions; replacement of major assemblies and modular components which can be readily removed/installed; the removal and replacement of easily accessible Shop Replacement Units (SRU) of a plug and pull nature; preparing COTS/ADPE repair cost estimates and assigning condition codes. Second echelon of maintenance for COTS/ADPE is further divided into the below two sub-level skill categories:

(1) Operator/Maintainer - A limited level of 2d EOM which is carried out by formally trained T/O billet operational personnel within the 4066 occupational field. Tasks principally performed by MOS 4066 personnel require an in-depth and specialized knowledge in the operational characteristics, software, networking, operational configuration and maintenance fault isolation/diagnosis, than is normally found at the incidental user/operator (1st EOM) level. This level of maintenance will also include the equipment's acceptance LTI, network installation, system configuration, software/hardware diagnostics and removal and evacuation of assets to a higher level of maintenance. Generally there is no requirement to collect MIMMS/AIS data at this level of 2d EOM, unless reconfiguration tasks cause COTS/ADPE asset to meet criteria of another TAMCN or evacuation to higher echelon of maintenance is required. Specific tasks authorized at this level are listed in appendix A.

(2) 2d EOM Repair Support - This level of maintenance will consist of preliminary diagnostics of LRUs evacuated by user/operators of failed COTS/ADPE systems. Formally trained and qualified maintenance personnel with MOS 2818/2821 will be responsible for replacement of SRUs within the faulty LRUs. Faulty SRUs removed at this level based on SMRC will be evacuated to the next higher echelon or the appropriate IMA. MOS 4066, if organic to the unit, will also be authorized this capability. This authorization will be limited to those SRUs that do not require soldering/desoldering or special handling. Normally MOS 4066 will be limited to those tasks associated with configuration /reconfiguration of COTS/ADPE assets to include servers, installation of network interface, software diagnosis and other

tasks not normally associated with the actual repair of faulty equipment. Any maintenance actions authorized to be performed by personnel with MOS 4066 will be coordinated and supervised by the resident 2818/2821.

(3) Cross-trained COTS/ADPE Support Personnel - Unit personnel possessing MOS's within the 28XX and/or 40XX occupational fields that have received and demonstrated cross training proficiency can be authorized limited COTS/ADPE maintenance tasks. Proficiency will be determined by the individual's ability to understand COTS/ADPE operation, routine hardware/software troubleshooting/diagnosis and capability to perform selected repair type functions. The individual must also have an understanding of maintenance and supply programs/procedures required to support routine 2d EOM tasks. Cross trained COTS/ADPE personnel can obtain proficiency through documented evidence of having completed a combination of formalized commercial computer repair schools, Marine Corps Communication Electronics School (MCCES) or an On the Job Training (OJT) program under the supervision of the unit's communications-electronics maintenance element. Local commanders will determine and identify cross trained personnel authorized to perform 2d EOM on COTS/ADPE assets.

2. Intermediate Maintenance (3d and 4th EOM). Performed by designated FSSG support activities and T/O designated 3d EOM organizational units. This category of maintenance includes in depth diagnosis and economical repair of all LRUs and SRUs evacuated from organizational activities. Authority for performing Intermediate Maintenance is identified per the unit's T/O mission statement. I MEF units possessing T/O authorization for intermediate, 3d EOM on Communications-Electronics Equipment will perform their assigned EOM based on qualified personnel and logistics. Units not authorized Intermediate Maintenance will evacuate their equipment to the FSSG, CSSG or MSSG based on location and situation. This category of maintenance is further broken down into the following two echelon levels of maintenance:

a. 3d Echelon Maintenance - Maintenance performed by trained T/O billeted MOS 2818/2821 maintenance personnel assigned to designated FSSG and 3d EOM organizational units. Maintenance performed at this level is beyond the capabilities and authorization of organizational second echelon. This EOM will include the repair of LRUs and SRUs, modification and/or upgrades on COTS/ADPE assets, in depth fault isolation/diagnosis, complex removal, repair and replacement of major assemblies and modular components and the soldering/desoldering of piece parts to restore LRUs to a serviceable condition. Maintenance at this level will be restricted to the repair of those items which do not require the on board component level replacement of Circuit Card Assemblies (CCA), but will include individually mounted (plug/pull) type chassis

components. These actions will be initiated and performed once it has been determined that the asset, based on repair cost estimate, is economical to retain. Personnel should be trained on preparing economical/uneconomical repair determinations, the assignment of serviceability condition codes, the submission of LUP and the ultimate reporting, tracking and disposal of unserviceable COTS/ADPE assets through appropriate supply channels. Maintenance action at this level will require the use of an ERO, in order to document expenditures of maintenance resources and man-hours.

b. 4th Echelon Maintenance - Performed by designated 1st FSSG, IMA. This EOM will include complex circuit card diagnosis and detailed repair utilizing Automated Test Equipment (ATE) and other specialized tools and test equipment. Maintenance of these items will include all those actions required to repair and make serviceable the subject LRU, SRU or components other than manufacturer rebuild. The primary intent of this echelon is to provide optimum support to the equipment user without having to evacuate the item to commercial vendors and manufacturers. This level of repair is not authorized within any MEF unit other than ELMACO.

COTS/ADPE MAINTENANCE POLICY AND PROCEDURES

APPENDIX A

ECHELONS OF MAINTENANCE AUTHORIZED TASKS

1. First Echelon Maintenance

a. Incidental User/Operator - maintenance on COTS/ADPE of a preventive nature and is performed by the user/operator of the equipment. These proactive steps, performed on a weekly basis, keep the operator's equipment in good working order. The equipment's record jacket and/or commercial operator's manual will be consulted for appropriate recommended PM actions.

(1) The following are authorized 1st echelon maintenance tasks for the Incidental User/Operator of COTS/ADPE (Any MOS):

(a) Safety Precautions:

- Turn off power to all separate computer components before attempting to disconnect any cables/peripherals or performing any other PM procedures.
- Only approved cleaning solutions will be used. Those products available at self-serve specifically labeled as computer cleaning products are approved. Cleaning products procured commercially must be approved by the cognizant communications-electronics maintenance section.
- Do not spray cleaning solutions directly onto utilizing the computer components. Use only a dampened cloth otherwise excess liquid may seep in and cause damage to electronic components.
- Ensure any parts that have been cleaned are completely dry before reconnecting power source.

(b) Desktop Computers and CPUs

- Installation and external cabling of system components (except LAN connection)
- Visual inspection and inventory accountability
- Case cleaning; do not remove case
- Diskette/CD cleaning
- External air filter cleaning (as required)
- Removal as an LRU, evacuation to 2d EOM repair and replacement

(c) Monitors

- Installation and CPU cabling
- Visual inspection and inventory accountability
- Case cleaning; do not remove case
- Screen cleaning
- External air filter cleaning (as required)
- Removal as an LRU, evacuation to 2d EOM repair and replacement

(d) Printers (DMP/JET/LASER, etc.)

- Installation and CPU cabling (except LAN connection)
- Visual inspection and inventory accountability
- Case cleaning; do not remove case
- Clean print head rail
- Set external DIP switches for printer emulation
- Removal/installation of ribbons/toner cartridges and paper
- Do not remove the case
- Removal as an LRU, evacuation to 2d EOM repair and replacement

(e) Laptop/Notebook Computers

- Installation and external cabling of system components (except LAN connection)
- Visual inspection
- Case cleaning; do not remove case
- Diskette/CD cleaning
- Battery Pack removal/installation
- Plug-in AC power adapter removal/installation
- Removal as an LRU, evacuation to 2d EOM repair and replacement

(f) Keyboards/Mouses/Surge Suppressors

- Installation and cabling
- Visual inspection
- Case cleaning (track-ball and roller cleaning on mouse)
- Do not remove keys
- Do not open the case
- Removal as an LRU, evacuation to 2d EOM repair replacement

(g) Peripherals (external: Drives,CD-ROM,Modems,etc.)

- Installation and external system cabling
- Visual inspection
- Case cleaning; do not remove case
- Diskette/CD cleaning
- Removal as an LRU, evacuation to 2d EOM repair replacement

(h) Uninterruptable Power Supply (UPS)

- Installation and cabling
- Visual inspection
- Case and cord cleaning
- Do not open/remove the case
- Removal as an LRU, evacuation to 2d EOM repair and replacement

(2) Installer/Operator Services. The following are the Installer/Operator tasks authorized at the 1st EOM level. These tasks will principally be performed by MOS 4066. Properly cross-trained computer support personnel designated and authorized by the commander can also be assigned these tasks. This higher level of 1st EOM includes all lower echelon level tasks plus LAN/WAN Network Installation, cabling, configuration, evacuation and equipment/peripheral replacement.

(a) All 1st Echelon incidental user/operator authorized tasks and the performance of periodic internal equipment PM tasks.

(b) Maintain a controlled Installer/Operator/ Maintainer PEB in accordance with reference (b), as usage directs and command authorizes, to support easily replaceable computer and network installation piece parts (i.e. T-connectors, BNC connectors, barrel connectors, CPU batteries, LAN terminators, cables, etc.). Under no circumstances is this to be confused with authorization to hold, requisition or retain spare parts under the guise of requirements for configuration management (i.e. LAN cards, I/O cards, video cards, SIMM chips, floppy/hard drives and other similar type cards and components). These internal components are not considered Operator/Maintenance PEB items. If command authorized and within the PEB criteria, they can be procured and stocked only through the respective unit's communications-electronics maintenance element. They can also be procured and installed by the maintenance element as part of reconfiguration management, upgrade or through standard repair/replacement actions.

(c) Safety Precautions. The following safety precautions will be exercised at all times:

1 Ensure proper Electrostatic protection is employed when handling/touching internal circuit cards.

2 Turn off power to separate computer components before attempting to connect/disconnect any cables/peripherals, checking/reseating any internal circuit cards/connectors, or performing any other PM procedures.

3 Only approved cleaning solutions will be used. Those products available at self-serve specifically labeled as computer cleaning products are approved. Cleaning products procured commercially must be approved by the cognizant communications-electronics maintenance section.

4 Do not spray cleaning solutions directly onto computer components. Use only a dampened cloth otherwise excess liquid may seep in and cause damage to electronic components.

5 Ensure any parts that have been cleaned are completely dry before reconnecting power source.

(d) Desktop Computers, Servers, Routers, & CPUs (and like/comparable items)(PFOFF):

- Incidental User/Operator maintenance tasks
- Installation, Software Load, and Network configuration
- Removal as an LRU, evacuation to 2d EOM repair and replacement
- Removal of cover for configuration, audit, verifying & cleaning internal components
- Re-seat circuits cards/connectors
- Set internal DIP switches & replace internal batteries requiring no soldering
- LAN/WAN installation and cabling
- Install LAN card/option keys upon initial network installation
- New equipment acceptance limited technical inspection
- No hardware repair actions authorized

(e) Monitors (PFOFF)

- Incidental User/Operator maintenance tasks
- Removal as an LRU, evacuation to 2d EOM repair and replacement
- Do not open/remove the case
- New equipment acceptance limited technical inspection
- No hardware repair actions authorized

(f) Printers (DMP/JET/LASER,etc.)(PFOFF)

- Incidental User/Operator maintenance tasks
- Network installation and cabling
- Set internal DIP switches
- Removal as an LRU, evacuation to 2d EOM repair and replacement
- New equipment acceptance limited technical inspection
- No hardware repair actions authorized

(g) Laptop/Notebook Computers (PFOFF)

- Incidental User/Operator maintenance tasks
- Installation, Software Load and Network configuration
- LAN/WAN installation and cabling
- Removal as an LRU, evacuation to 2d EOM repair and replacement
- New equipment acceptance limited technical inspection
- Do not open/remove the case
- No hardware repair actions authorized

(h) Keyboards/Mouse/Surge Suppressors (PAOOZ)

- Incidental User/Operator maintenance tasks
- Removal of cover to perform internal inspection and cleaning as required
- Removal as an LRU, evacuation to 2d EOM repair and replacement
- Replace keys caps
- Hold a "small" stockage (two or less each) of various types, letter, #'s, and Func key caps as replacement key caps gained from unserviceable keyboards (as an O/M PEB)

(i) Peripherals(external drives,CD-ROM,modems, etc.) (PFOOZ)

- Incidental User/Operator maintenance tasks
- Installation, cabling, and Network configuration (as required)
- Network installation (as maybe required)
- Removal as an LRU, evacuation to 2d EOM repair and replacement
- New equipment acceptance limited technical inspection
- No hardware repair actions authorized
- Do not open/remove the case

(j) Uninterruptable Power Supply (UPS)(PFOFF)

- Incidental User/Operator maintenance tasks
- Removal as an LRU, evacuation to 2d EOM repair and replacement
- New equipment acceptance limited technical inspection
- No hardware repair actions authorized
- Do not open/remove the case

b. 2d Echelon Maintenance Services. Maintenance tasks principally performed by communications-electronics maintenance personnel (MOS 2818/21) which include: warranty service/repair coordination and management; fabrication/repair of special purpose cables; scheduled maintenance/upgrades on COTS/ADPE end items/LRU's; unscheduled diagnosis, fault isolation, and repair of readily traceable COTS/ADPE end item/LRU malfunctions; replacement of major assemblies/modular components which can be readily removed/installed and do not require critical adjustment; the removal and replacement of easily accessible SRUs of a "plug-pull" nature not authorized at first echelon; preparation of COTS/ADPE repair costs estimates; and the assignment of serviceability condition coding for excess reporting/redistribution.

(1) Generally there is no requirement to collect MIMMS/AIS data at the 1st EOM in that no repair actions are authorized. However, an ERO will be required to capture all second echelon corrective or modification actions in accordance with doctrinal and local procedures. The ERO will document expenditures of maintenance resources and man-hours and can be used as an accountability and inventory tool.

(2) Organizational 2d EOM repair on COTS/ADPE equipment will be performed only by qualified personnel holding the MOS 2818/2821. Cross-trained computer support personnel, usually MOS 4066 may perform 2d EOM services, if approved by local commander and done under the direction, supervision and management of the unit's communications-electronics section.

(3) COTS/ADPE warranty repair services should be exercised and managed at the 2d EOM level. This will ensure money and maintenance effort is not expended on assets still under warranty. It will allow the commander to obtain services extended under the equipment's warranty. Centralized management should also ensure that units do not void an equipment's warranty through unauthorized or unnecessary repair. The only exception to this procedure would be for "emergency" mission critical repairs which must be clearly justified and approved by the commander, before performing repairs that would definitely void the contracted warranty.

(a) Care should be exercised by maintenance personnel before any repair is considered on a warranted item. Personnel should know the equipment's warranty clauses and specifics, especially in regards to it being covered as an end item or as individual components or peripherals. Any unauthorized maintenance that voids the warranty, thereby incurring additional costs, will be an owning unit responsibility.

(4) 2d Echelon Corrective Maintenance actions on COTS/ADPE end items, LRUs and SRUs will be gauged by the equipment's depth of repair, age, technology, mission need and established SMR codes, coupled with sound fiscal prudence. Prior to 2d EOM repair parts procurement, local vendor support, contracted maintenance action and/or higher EOM evacuation, a repair cost estimate/analysis will be performed by maintenance repair personnel to determine whether the equipment is considered economical to repair.

(a) 2d echelon repair services may require the establishment, management and use of a PEB program. This program will provide the communications-electronics element readily available items of a high use nature. A unit PEB will be based upon the unit's established requirements and must meet criteria set forth in reference (b). These COTS/ADPE PEBs will allow commanders a self- sufficient logistics capability in support of deployments and contingency type operations. Additionally, they will provide the ability for rapid equipment restoration and support for critical COTS/ADPE. Unit commanders should also consider additional supply support programs such as insurance items that will augment the PEB program and provided enhanced support.

(b) COTS/ADPE equipment found to meet economical to repair cost criteria will be repaired to the fullest extent, within the unit's authorized EOM and associated authorized tasks.

(c) COTS/ADPE end items and LRUs with an SMR code of PFOFF and found to exceed economical repair at the 2d EOM level will be evacuated to the unit's supporting IMA with an inducting ERO statement which states: "Repair/Washout-Exceeds Economical Repair". The supporting IMA will evaluate repairs required, revalidate repair cost estimate and then:

1 Repair the item if found to be economical based on the revalidated repair cost estimate and/or based upon available previously salvaged parts.

2 Not repair the item due to an "uneconomical to repair" determination. A LUP will be generated, once the owning unit makes the determination that they do not desire to retain serviceable components of the end item. The unit must state on inducting ERO it's desire to be informed by IMA if equipment is to be washed out. If the unit desires to retain asset, all future maintenance actions and funding become owning unit's responsibility. If the unit does not desire to retain asset, the LUP is attached to the ERO and returned to the unit. The IMA will then dispose of the equipment through the DRMO.

3 COTS/ADPE 2d EOM replaceable SRUs will generally be considered as having an SMR code of PGOOZ for SRUs costing less than $300.00 and an SMR code of PGOFF for SRUs costing greater than $300.00. Faulty PFOOZ coded SRUs will be disposed of locally at 2d EOM. All SRUs with an SMR code of PGOFF even though they may not be repairable, will be evacuated to the IMA for maintenance action or washout/disposal.

4 COTS/ADPE found to be beyond the 2d EOM elements capability in personnel; technical training; knowledge; skill; tools; test equipment; publications or logistic support will be evacuated to the unit's supporting 3d EOM (IMA). Evacuation of COTS/ADPE to the IMA for warranty repair services is not to be employed unless called for by assigned SMR code. The IMA must be advised if warranty is still valid and any specifics, before equipment is placed into the maintenance cycle.

(d) COTS/ADPE considered as serviceable, but determined to be outdated for mission requirements and not cost effective to upgrade will be condition coded per an LTI at the 2d echelon level. Assets should then be turned into the unit's supply organization for disposition and disposal as obsolete serviceable excess. The

following tasks are to be accomplished at the 2d echelon level of maintenance by organizational unit repair personnel holding the MOS 2818 or 2821:

1 All lower echelon authorized maintenance tasks.

2 Safety Precautions: The following safety precautions will be exercised at all times.

a Ensure proper ESD protection is employed when handling/touching interval circuit cards and components.

b Turn off power to separate computer components before attempting to connect/disconnect any cables/peripherals; checking or reseating any interval circuit cards/components/ connectors or when performing other PM type services.

3 Desktop Computers, Servers, Routers, and CPU (and like/comparable items)(PFOFF)

- Replacement or installation of "plug-n-pull" circuits cards (PGOOZ or PEOOZ)
- Replacement or installation of drive units (PGOOZ)
- Replacement or installation of "plug-n-pull" memory SIMM/IC/CPU chips (PGOOZ)
- Replacement or installation of fuses and batteries (PAOOZ)
- Replacement or installation of internal connectors (PGOOZ)
- Fabrication/repair of common and special purpose cables (PGOOZ or MOOOZ)
- Setting internal and external DIP switches
- Evacuation to 3d EOM for higher level repair
- Quality control of repairs completed

4 Monitors (PFOFF)

- Replacement or installation of "plug-n-pull" circuits cards(PGOOZ)(if applicable)
- Replacement or installation of fuses (PAOOZ)
- Replacement/repair of internal "plug-n-pull" connectors(PGOOZ)(if applicable)
- Replacement of control knobs and connectors(PGOOZ)
- Fabrication/repair of common and special

purpose cables(PGOOZ or MOOOZ)
- Evacuation to 3d EOM for higher level repair
- Quality control of repairs completed

5 Printers (DMP/JET/LASER,etc.)(PFOFF)

- Replacement or installation of "plug-n-pull" circuits cards(PGOOZ)(if applicable)
- Replacement or installation of control knobs and connectors(PGOOZ)
- Replacement or installation of fuses (PGOOZ)
- Replacement or installation of print-heads and external cables(PGOOZ)
- Fabrication/repair of common and special purpose cables(PGOOZ or MOOOZ)
- Evacuation to 3d EOM for higher level repair
- Quality control of repairs completed

6 Laptop/Notebook Computers (PFOFF)

- Replacement or installation of "plug-n-pull" circuit cards(PGOOZ)(if applicable)
- Replacement or installation of drive units (PGOOZ,PEOOZ or PGOFZ)
- Replacement or installation of fuses and batteries (PAOOZ)
- Replacement or installation of internal connectors (PGOOZ)
- Fabrication/repair of common and special purpose cables(PGOOZ or MOOOZ)
- Set internal and external DIP switches
- Evacuation to 3d EOM for higher level repair
- Quality control of repairs completed

7 Keyboards/Mouses/Surge Suppressors(PAOOZ)

- Replacement or installation of key caps (XBOOZ)
- Replacement or installation of switches (XBOOZ)
- Replacement or installation of cables (XBOOZ)
- Disposal, if item cannot be repaired
- Keyboards/Mouses/Suppressors are repaired/ washed out at the 2d EOM level

8 Peripherals(external drives,CD-ROM, modems, etc.)(PFOOZ)

- Replacement or installation of "plug-n-pull" circuit cards(PAOOZ)(if applicable)
- Replacement or installation of drive units (PGOOZ)
- Replacement or installation of "plug-n-pull" IC chips(PGOOZ)(if applicable)
- Replacement or installation of fuses or batteries(PAOOZ)
- Replacement or installation of switches or control knobs(PGOOZ)
- Fabrication/repair of common and special purpose cables(PGOOZ or MOOOZ)
- Evacuation to 3d EOM for higher level repair
- Quality control of repairs completed

9 Uninterruptable Power Supply(UPS)(PFOFF)

- Replacement or installation of "plug-n-pull" circuit cards(PGOOZ)(if applicable)
- Replacement or installation of fuses or batteries(PAOOZ)
- Replacement or installation of switches or control knobs(PGOOZ)
- Fabrication/repair of common and special purpose cables(PGOOZ or MOOOZ)
- Evacuation to 3d EOM for higher level repair
- Quality control of repairs completed

c. Third Echelon Maintenance (Intermediate Maintenance)

(1) Third Echelon Maintenance on COTS/ADPE assets will primarily be performed by maintenance personnel possessing MOS 2818/21. Commanders of units possessing a 3d EOM capability and rate 2818/21(s) by T/O structure can authorize appropriate cross-training of other 28XX MOSs in the area of COTS/ADPE maintenance. Individuals with microminature soldering training, secondary MOS 5911, will be required to perform circuit board repair of components that are not of a "plug-n-pull" nature.

(2) The following tasks are authorized at 3d EOM for Type II, H8XXX and locally TAMCN COTS/ADPE end items; LRUs, SRUs and associated peripherals:

(a) Capable of performing all lower echelon of maintenance authorized tasks, as required.

(b) Troubleshoots SRUs, circuit cards, assemblies to determine the faulty surface mount electrical component (i.e. resistor, diode, integrated circuit/chip) using diagnostic equipment and software. This type repair will be guided to a great extent by economic feasibility.

(c) Removes faulty electrical component(s) from circuit card and installs known good component(s).

(d) Removes and replaces COTS/ADPE equipment motherboards (PGFFZ).

(e) Replacement or installation of internal cables and electrical wiring (PGFFZ).

(f) Replacement or installation of power supply assemblies (PGFFZ).

(g) Review 2d EOM repair cost estimates/analysis to determine if the item is economical to repair or unserviceable.

(h) Condition codes, washes out, and disposes of COTS/ADPE through appropriate supply channels that has been deemed uneconomical to repair by repair cost estimates. 3d EOM will provide the owning unit with a LUP for accountability purposes and concluding of the maintenance transaction.

(i) Evacuates COTS/ADPE to Vendor/Manufacturer of contract maintenance service facilities, if repairs required exceed the maintenance capabilities of the IMA; and the evacuation is deemed to be in the best economical interest to the government.

(j) Executes and manages the effective utilization of selective interchange and cannibalization maintenance techniques in support of mission critical needs and sustainment of a high COTS/ADPE equipment readiness, per this Directive and reference (f).

(k) Reviews appropriate supply support enhancement programs such as PEB, Operating Stock, Insurance Items, and Salvage Parts Blocks; for recommendation, solicitation, authorization, and establishment in support of timely COTS/ADPE repair; sustainment of high equipment readiness; and/or the "limited" continued support of "obsolete COTS/ADPE" required by the user, due to T/E deficiency and lack of replacement equipment.

1 Localized supply enhancement programs authorized and established will be reviewed annually for effectiveness, stockage, and continued mission need.

2 Only those unit commanders, authorized by T/O a 3d EOM capability and supported by a T/O billet for MOS 2805/2802 Data Communications/Electronics Maintenance Officer, will be authorized to establish and maintain a "Salvage Parts Block." This is a non-doctrinal (localized) program wherein:

- Condition Code "H" COTS/ADPE assets are cannibalized/salvaged for serviceable SRU's/piece parts that "have a reasonable chance or history" of being needed to support the future repair of like or similar equipment. This program is based upon the continued economical support of aged/obsolete COTS/ADPE that continues to have a "user mission need" due to replacement T/E shortfalls.

- As in all authorized programs: detailed local program procedure, control and management must be detailed, published and maintained. The minimal needed stockage to sustain/ enhance readiness is the programs mandated purpose and this program is not to serve as a "salvage dump" for every COTS/ADPE piece or part removed from unserviceable assets.

(3) Command inspection programs should be focused at ensuring local supply support programs are mission enhancing and being managed effectively.

d. Fourth Echelon Corrective Maintenance. All corrective maintenance on COTS/ADPE will be principally performed at third echelon level and below. Any 4th EOM COTS/ADPE repairs required will be identified, executed, controlled and managed at the FSSG IMA level.