



Standing Operating Procedure (SOP)

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC

BIOMEDICAL MAINTENANCE (Brigade Combat Team)

REVISION-0

UNCLASSIFIED

Distribution Statement A

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DEFINITIONS: WARNINGS, Cautions, Notes

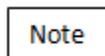
Throughout this manual, warnings, cautions, and notes are used to emphasize important or critical guidance that must be observed. These special notifications are used for the following conditions:



An operating procedure or practice that could result in loss of life, personal injury, and/or equipment damage if not correctly followed.



An operating procedure or practice that could result in damage to or destruction of equipment if not strictly observed.



An operating procedure or condition that must be emphasized.



REPORTING ERRORS, OMISSIONS, AND IMPROVEMENT RECOMMENDATIONS

Help improve this SOP. Report errors, omissions, or associated improvement recommendations for consideration in the next update or revision of this publication. Refer to DA Form 2028, 'Recommended Changes to Publications and Blank Forms.' and specify applicable change recommendations. Mail completed DA Form 2028 to: Attn: XXXXXX, U.S. Army Forces Command (FORSCOM), Fort McPherson, GA 30330-6000; or, FAX completed form 2028 to: (XXX) XXX-XXXX.

REVISION HISTORY

Revision Number	Date	Activity	Reason for Revision
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1. INTRODUCTION.

a. This Standing Operating Procedure (SOP) supplements instructions contained in AR 40-61, AR 750-1, and TB MED 750-2 for the administration and management of medical equipment maintenance.

b. Medical maintenance personnel should review this SOP within 30 working days after reporting for duty. This SOP should be reviewed and updated every 18 months.

2. REFERENCES.

- | | |
|-------------------|---|
| a. AR 40-61 | Medical Logistics Policies and Procedures |
| b. AR 190-51 | Security of Unclassified Army Property |
| c. AR 220-1 | Unit Status Reporting |
| d. AR 25-400-2 | The Army Records Information Management System (ARIMS) |
| e. AR 385-10 | The Army Safety Program |
| f. AR 700-4 | Logistics Assistance |
| g. AR 700-138 | Army Logistics Readiness and Sustainability |
| h. AR 710-2 | Inventory Management Supply Policy Below the Wholesale Level |
| i. AR 700-15 | Packaging of Materiel |
| j. AR 700-68 | Storage and Handling of Liquefied and Gaseous Compressed Gasses |
| k. AR 700-138 | Army Logistics Readiness and Sustainability |
| l. AR 700-139 | Army Warranty Program |
| m. AR 710-2 | Supply Policy Below the National Level |
| n. AR 725-50 | Requisitioning, Receipt, and Issue System |
| o. AR 735-5 | Policies and Procedures for Property |
| p. AR 750-1 | Army Materiel Maintenance Policy |
| q. AR 750-43 | Test, Measurement, and Diagnostic Equipment |
| r. DA PAM 385-24 | The Army Radiation Safety Program |
| s. DA PAM 385-40 | Army Accident Reporting and Records |
| t. DA PAM 710-2-1 | Using Unit Supply Systems: Manual Procedures |
| u. DA PAM 710-2-2 | Supply Support Activity Supply System: Manual Procedures |
| v. DA PAM 750-8 | The Army Maintenance Management System (TAMMS) User's Manual |
| w. SB 8-75 Series | Army Medical Logistics Supply Bulletins |

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- x. TB 38-750-2 Maintenance Management Procedures for Medical Equip.
- y. TB 43-180 Calibration and Repair Requirements for the Maintenance of Army Materiel
- z. TB MED 1 Storage, Preservation, Packaging, Packing, Maintenance, and Surveillance of Materiel - Medical Activities
- aa. TB MED 7 Maintenance Expenditure Limits for Medical Materiel
- bb. TB MED 245 Warning Tag for Medical Oxygen Equipment (DD Form 1191)
- cc. TB MED 521 Management and Control of Diagnostic, Therapeutic, and I Medical Research X-Ray Systems and Facilities
- dd. TB MED 522 Control of Health Hazards From Radioactive Materiel Used in Self-Luminous Devices
- ee. TB MED 523 Control of Hazards to Health From Microwave and Radio Frequency Radiation and Ultrasound
- ff. TB MED 524 Control of Hazards to Health From Laser Radiation
- gg. TB MED 525 Control of Hazards to Health From Ionizing Radiation Used by the Army Medical Department
- hh. TB MED 750-1 Operating Guide for Medical Equipment Maintenance
- ii. TB MED 750-2 Operating Guide for MTOE Medical Equipment Maintenance
- jj. STP 8-68A15-SM-TG Soldier's Manual and Trainers Guide for Biomedical Equipment Specialist 68A
- kk. N/A Safe Medical Devices Act of 1990 (Renamed as: Food and Drug Administration (FDA) Modernization Act of 1997)
- ll. ATTP 4-33 Maintenance Operations

3. GENERAL.

a. Purpose. This SOP provides policy, procedure, and management guidance for Biomedical Equipment Specialists (BES [MOS 68A]) assigned to perform medical equipment maintenance within the Brigade Combat Team (BCT).

b. Scope. These procedures are applicable to BES personnel assigned to the Brigade Medical Supply Office (BMSO) medical maintenance section and their supervisors.

c. Mission. To ensure all medical equipment belonging to supported units are maintained in a fully mission capable status. The following units are supported by this BCT medical maintenance shop (by unit, location, Point of Contact [POC], phone, email):

	UNIT	LOCATION	POC	PHONE	EMAIL
1					
2					
3					



d. Standards of Medical Maintenance. Equipment used by medical personnel is of critical importance since its purpose is to save lives while ensuring patient, visitor, and staff safety. AR 750-1, Army Materiel Maintenance, TM XX-10/20 defines the Army maintenance standard. The standard for Army medical equipment is supported by military Technical Manuals (TMs), manufacturer service manuals, and associated maintenance plans developed by the U. S. Army Medical Materiel Agency (USAMMA). Collectively, these technical references support medical equipment troubleshooting and fault correction; forming the basis of the Army standard. Army equipment meets the medical-maintenance standard when the following conditions exist:

- (1) Equipment is Fully Mission Capable (FMC).
- (2) All faults are identified following prescribed intervals using the 'items to be checked' column of applicable TM XX-10 and XX-20 series PMCS tables; or, as specified by supporting manufacturer service manuals.
- (3) All repairs, services, and other related work that correct field-level equipment/materiel faults and for which the required parts or supplies are available, have been completed in accordance with DA Pam 750-8 or DA Pam 738-751.
- (4) Parts and supplies required to complete the corrective actions, but which are not available in the unit, are on a valid funded requisition in accordance with AR 710-2.
- (5) Corrective actions that are not authorized at field level by the Maintenance Allocation Chart (MAC) must be on a valid support maintenance request (e.g., DA Form 5990-E and DA Form 2407).
- (6) Scheduled services are performed at service intervals required by applicable technical publication.
- (7) Equipment services should be performed to meet the Army readiness goal of 90-percent (e.g., 90-percent of the activities defibrillators must be fully-mission capable at all times).
- (8) All routine, urgent, and emergency Maintenance Work Orders (MWOs) are applied to equipment in accordance with AR 750-10. Refer to Appendix A, entitled: Defense Medical Logistics Standard Support (DMLSS) Work Order Flow Chart for a process-flow representation of maintenance required and no maintenance required work flow implementation performance steps.
- (9) All authorized Basic Issue Item (BII) and Components of End Items (COEI) are present and serviceable or are on a valid supply request.

4. RESPONSIBILITIES.

a. The BCT BES is responsible to ensure that all medical equipment is maintained in a FMC status at all times; even when required maintenance exceeds individual capabilities. The following organizations share in medical maintenance support; however, the BCT BES is responsible for coordinating maintenance with them. BCT BES personnel will provide Field Support (FS) services for organic medical equipment and in support of other designated units (e.g., ground ambulance, treatment platoon, and battalion aid station):

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(1) When a Medical Logistics (MEDLOG) Company is resident on the installation, it will provide field and sustainment maintenance to medical activities as assigned and commensurate with its capabilities.

(2) In the absence of a MEDLOG Company or in support of maintenance beyond MEDLOG Company capabilities, the Installation Medical Maintenance Activity (IMMA) or Medical Department Activity (MEDDAC) will provide medical maintenance Sustainment support services above the FS, BCT capabilities of all units on the installation. The USAMMA Depot will coordinate sustainment support maintenance when installation capabilities are exceeded. When deployed, sustainment support maintenance activities will be identified upon arrival in theater:

b. BES assigned to maintain BCT medical equipment will:

- (1) Ensure safety inspections and tests are performed in accordance with AR 40-61, TB MED 750-2, and this SOP.
- (2) Meet basic concepts, objectives, and policies for the maintenance of medical equipment.
- (3) Perform maintenance of medical equipment effectively throughout its life cycle.
- (4) Implement maintenance programs for repair, Preventive Maintenance Checks and Services (PMCS), electrical safety inspections and tests, and Calibration, Verification, Certification (CVC) testing.
- (5) Provide planning, guidance, and assistance to other organizational elements impacting the medical-maintenance mission.
- (6) Provide guidance to the C Co. Commander for development of medical education and training programs applicable to equipment operators and medical equipment repairers.
- (7) Property accountability and security procedures are in accordance with regulations and directives governing security, accountability, and control of tools, TMDE, and other Army property.
- (8) Provide frequent equipment status updates to the Commander and staff.
- (9) Establish a library containing a master file copy of both operator and maintenance manuals for all equipment on hand.
- (10) Ensure Work Orders (WOs) and associated maintenance forms are legible and in compliance with this SOP and other applicable directives.
- (11) Maintain strict adherence to all safety procedures during maintenance evolutions.
- (12) Ensure PMCS and CVC tests are performed in accordance with applicable TM or manufacturer service manuals.
- (13) Demonstrate personal responsibility for individual training and career development.

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(14) Ensure all maintenance and safety related problems are communicated to the supervisor.

(15) Label all equipment with the admin designation assigned in the current Automated Information System (AIS).

(16) Employ some form of medical equipment services database, catalog, tracking system, or scheduling system in the event a US Army system is not in place.

(17) Assist the Commander in developing a directive emphasizing supervisor and equipment operator responsibilities for the care, maintenance, and documentation of medical equipment services.

c. Brigade Commanders will mandate that all subordinate units:

(1) Inventory their Medical Equipment Sets (MES); and, input all medical equipment requiring routine maintenance and service into their respective Standard Army Maintenance System - Enhanced (SAMS-1E) boxes.

(2) Reconcile data and schedule services with their FS and/or sustainment support unit.

(3) Utilize the SAMS-1E to track scheduled and unscheduled WOs and report Army Materiel Status System (AMSS) data through established reporting or command channels.

d. Unit Commanders will:

(1) Ensure that all sub-hand receipt holders of medical equipment provide a completed DA Form 1687, Notice of Delegation of Authority-Receipt for Supplies (or Signature Card). The Delegation of Authority establishes an authorized chain of custody for equipment submitted to and retrieved from medical maintenance.

(2) Emphasize and allocate adequate resources (e.g., time, personnel and funding) to perform operator-level maintenance for medical equipment.

(3) Ensure that operator and maintainer-level medical equipment maintenance is included in the unit training schedule.

(4) Conduct a 100% inventory of all Modified Table of Organization and Equipment (MTOE) medical equipment requiring maintenance. All medical equipment will be input into the respective SAMS-1E computer. This includes medical equipment listed as separate property Line Items (LINs) (e.g. X-Ray equipment), locally managed non-standard equipment, and medical equipment identified as components of medical equipment sets (e.g., defibrillators or Automatic External Defibrillators [AEDs]).

(5) Exhaust all efforts to accomplish unit-level medical maintenance missions before requesting support due to lack of personnel, TMDE, etc.



5. MAINTENANCE POLICIES AND MANGEMENT.

a. Assignment Priorities.

(1) Device priorities are established in the AIS to aid in effective allocation of medical maintenance resources.

(2) Device priorities are assigned by the medical maintenance manager.

(3) WO priorities are requested by the customer and may require further approval in accordance with maintenance activity external SOP.

(4) Consideration factors when assigning or determining priorities include:

- (a) Force Activity Designator (FAD)
- (b) Urgency of Need Designator (UND)
- (c) Patient, visitor, and staff safety
- (d) Mission requirements
- (e) Maintenance Regeneration Enabler (MRE) and parts availability
- (f) Device criticality
- (g) Device density
- (h) Historical maintenance-scheduling and prioritization experiences
- (i) Device location

(5) The basic unit/section priority will be assigned to all equipment maintenance requests received from that area with the exception of critical or life saving equipment. Any exception to this policy must be approved and initialed on the WO by the Unit Maintenance Officer (UMO) or medical maintenance manager.

b. Equipment Management.

(1) The medical maintenance manager may change customer base dates to adjust the workload or to ensure efficient maintenance support.

(2) Priorities, scheduled service requirements, and performance times must be reviewed at least annually.

(3) When an individual piece of equipment is transferred from one user to another within the BCT support area, the scheduled service base dates must be changed to the base date of the new location. This action should be initiated when notified by unit supply that a piece of equipment has been moved.

(4) The automated/manual WO register will be reconciled at least monthly. All WOs listed on the register must be accounted for. Those WOs on hand and not listed on the register must be entered into the system. Those WOs listed on the register but not physically located must be researched; appropriate action must be taken.

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(5) The medical maintenance manager will ensure that copies of the latest authorized maintenance automation system outputs applicable to maintenance management are on hand and available to all maintenance personnel. The equipment density listing should be manually updated as changes occur (e.g., additions, deletions, admin, serial number, model number, etc.).

(6) When medical equipment items requiring scheduled services cannot be located, a reasonable effort should be made to locate them. If the equipment operator or user is unable to locate the equipment, the required scheduled service will be closed out and identified as 'Equipment Item Not Located' in the remarks section of the SAMS-E Work Order (WO). All medical-equipment items that cannot be located will be reported to the Property Book Officer (PBO) at the end of the scheduled maintenance period for appropriate action.

(7) The medical maintenance manager must ensure that scheduled services are completed in a timely manner and entered into the authorized maintenance AIS data base.

(8) AR 40-61 stipulates that each medical-equipment item will be tested for serviceability and electrical safety prior to initial use and at least annually, thereafter.

(9) Prolonged exercises or missions involving patient treatment may require increased frequency of scheduled services, for equipment designated to be used in critical care areas (e.g., on a semi-annual basis).

(10) All medical equipment services under care of the BCT medical maintenance shop must be completed within a 12-month period. To fulfill this requirement, a certain number of units must be serviced each month.

(11) Army commanders may be required to defer the accomplishment of maintenance because of resource shortfalls or other factors.

(12) When scheduled maintenance is deferred, the action must be documented in SAMS-E to correctly report unit status as of the last day of the month.

(13) The reason services were not performed will be annotated on the scheduled maintenance listing and initialed by the UMO, or medical maintenance manager.

(14) A copy of services not performed will be forwarded to the unit that will be responsible for rescheduling deferred services with the medical maintenance section.

(15) The labor rate for this organization is _____. This rate should be reviewed and updated semi-annually and updated in SAMS-1E.

(16) Individual direct labor Man-Hour (MH) worksheets will be used to capture daily MHs expended by assigned personnel.

c. Retention and Disposition of Non-Radiation Medical-Maintenance Records.

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- (1) Retention and disposition of completed maintenance request WOs will be in accordance with AR 25-400-2, The Army Records Information Management System (ARIMS) and kept on file for a period of 1- year following the close date.
 - (2) File WOs in WO number sequence; by close date, and arrange by month.
 - (3) SAMS-1E will generate both scheduled and unscheduled WOs for use when network connectivity is interrupted. Alternatively, DA Form 2404 (Refer to Appendix B, entitled: DA Form 2404 [Equipment Inspection and Maintenance Worksheet]) and DA Form 2407 may be used. WO data, however, must be transferred to SAMS-1E at the first opportunity, in order to maintain maintenance-database integrity.
 - (4) Only forms listed in Technical Bulletin (TB) 38-750-2 will be used to reflect services performed. Refer to Appendix C, entitled: DA Label 175 (Defibrillator Energy Output Certification Label), Appendix D, entitled: DD Form 2163 (Medical Equipment Verification/Certification), and Appendix E, entitled: DD Form 2164 (X-Ray Verification/Certification Worksheet).
 - (5) The automated or manual maintenance performance report will be maintained for a period of 1-year with a current report being reviewed and filed monthly.
 - (6) Establish and maintain a waiver file in the Medical Maintenance Branch (MMB).
 - (a) The waver file will contain original waivers authorizing the Minimum Equipment List (MEL) to be exceeded.
 - (b) Destroy the original waiver-file record upon disposal of the equipment item by the PBO.
- d. Retention and Disposition of Radiation Protection Program Medical-Maintenance Records.
- (1) Radiation Protection Program Files (RPPFs). RPPFs form a permanent record file, #750-8i in accordance with AR 25-400-2, The Army Records Information Management System (ARIMS) established for each X-Ray system. This permanent file will contain the following documentation which collectively make-up the RPPF:
 - (a) Procurement contract or issuance paperwork (if centrally fielded)
 - (b) Warranty documentation
 - (c) FDA Form 2579, Report of Assembly of a Diagnostic X-Ray System
 - (d) Acceptance Test Packet (ATP)
 - (e) Service contract documentation (if under service contract)
 - (f) Unscheduled services records
 - (g) Scheduled services records
 - (h) Radiation protection surveys
 - (i) Applicable Field Change Orders (FCOs) and modifications performed

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- (j) Lifetime maintenance history
- (k) Condition-coding documentation; if turned-into the Defense Reutilization Management Office (DRMO) or traded-in with the Original Equipment Manufacturer (OEM)

Note

Scheduled and unscheduled service records as well as lifetime maintenance history may be stored in hard copy format; or, as electronic format records that are readily retrievable, upon demand, from the AIS.

(2) Missing RPPF Documentation. Whenever any required document is missing from an RPPF, the BES will make every effort to locate the missing document(s). For missing radiation protection surveys, contact the Radiation Protection Officer (RPO). For missing Form FDA 2579, the medical maintenance manager will place an explanatory, signed memorandum in the appropriate RPPF to account for any document not located.

(3) Lateral Transfer of RPPF. If the X-Ray unit or system is laterally transferred, the entire RPPF will be sent to the receiving activity. If the X-Ray unit or system is sent to DRMO, the RPPF must be retained in the Current File Area (CFA) for a period of 5-years. The file folder label of a unit or system turned-in to DRMO should be annotated 'Destroy in CFA on (Insert date that is 5-years forward from date of DRMO acceptance).'

(4) X-Ray Recording Procedures. Additional recording requirements exist for X-Ray systems. Medical maintenance activities will establish and maintain RPPF for each supported end item.

e. Scheduled Services.

(1) Scheduled services are all actions performed to retain an item in a specified condition by providing systematic inspection, detection, and prevention of apparent failures. Performance of scheduled services will take priority over all medical maintenance actions except for emergency repairs including those where patient, visitor, or staff safety is at risk.

(2) Upon receipt of new equipment, the TM or manufacturer service manual will be researched to determine if scheduled services are required. If so, automated records (SAMS-1E) will be initiated and the equipment added to the scheduled services program.

(3) All maintenance services will be programmed, planned, initiated, tracked, and closed within the current AIS. If network connectivity is not available, a paper tracking system using DA Form 5988-E, Automated Equipment Maintenance and Inspection Worksheet or DA Form 2404 (Refer to Appendix B, entitled: DA Form 2404 [Equipment Inspection Maintenance Worksheet]) must be used.

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(4) Scheduled maintenance includes inspection (INSP), Preventive Maintenance (PM), calibration (CL), and Scheduled Parts Replacement (SPR). For further explanation of these scheduled maintenance services, Refer to Paragraph 7, entitled: Scheduled and Unscheduled Service Procedures. Scheduled maintenance will be performed in accordance with AR 40-61, TB MED 750-2, equipment TMs, and manufacturer service manuals.

(5) The AMEDD standard for completing scheduled services such as INSP (including Safety Tests), PM and CL is 97-percent:

(6) TB 43-180 does not require calibration of patient scales for weight determination other than those used at the local medical treatment facility or MEDDAC. Upon hospital-staff request, however, a courtesy scale inspection may be performed for unit screening purposes. DD Form 2163 will not be affixed to any scale following a courtesy inspection.

(7) Performance of scheduled services not on the authorized maintenance automation system service listing must be recorded as unscheduled WO transactions, as appropriate (e.g., PM, ST, CL). Maintenance technicians must ensure that equipment is authorized and documented on the user's hand receipt. After servicing, equipment should be added to the maintenance database to ensure that future services are performed on schedule.

(8) Scheduled services accomplished as a portion of a repair will not be recorded as a separate action. All actions necessary to restore defective equipment to a fully mission capable status are considered part of the repair; this includes electrical safety and any required calibration/verification services. Total MHs expended for all actions performed will be included in the repair total.

f. **Unscheduled Maintenance Program.**

(1) Unscheduled services generally include the following types of maintenance:

- (a) Repair services
- (b) Technical Inspections (TIs)
- (c) Warranty repairs
- (d) Medical Materiel Quality Control (MMQC) Messages
- (e) Field Change Orders (FCOs)
- (f) Verification inspections

(2) Repair services include all maintenance actions that restore faulty equipment to a fully mission capable status. BES will perform services according to their ability, capability, resources, and authorization. The primary objective of the BES is to prioritize and perform medical maintenance services ensuring medical devices are available and operate as designed.

(3) Technical Inspections/Evaluations (TI/E) are unscheduled evaluations of medical devices to determine acceptability, economic reparability, or condition status.

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(a) Acceptance Technical Inspection (ATI) will be performed on all newly procured, reissued, or transferred medical devices prior to their entry into the local healthcare environment and before patient-care use.

(b) Technical Inspection for Excess Equipment must identify the degree of serviceability, condition, and completeness in terms of readiness for issue and use. Condition coding must be accurate to ensure proper disposition of equipment. The AMEDD uses the condition codes A, B, F, G, and H in accordance with Requisitioning, Receipt and Issuing System AR 750-50.

(c) DD Form 1577 (RED) will be affixed to all biomedical equipment items requiring a TI that is determined to be condition code H (Unserviceable/Condemned). Refer to Appendix F, entitled: Materiel Condition Code Tags.

(d) The DD Form 1577-2 (GREEN) will be affixed to all biomedical equipment items requiring a TI that is determined to be condition code F (Unserviceable/Repairable). Refer to Appendix F, entitled: Materiel Condition Code Tags.

(4) Verification inspections are performed to verify the accuracy of a TI when it results in an unserviceable condition code of H (Unserviceable/Condemned) or P (Unserviceable/Reclamation). When an item is determined to be uneconomically repairable (e.g., no longer supported by the manufacturer) the item will be returned to the hand receipt holder along with an unserviceable, uneconomically repairable memorandum.

(5) When equipment remains under warranty, warranty services must be coordinated with the manufacturer directly, through the IMMA, or in collaboration with the USAMMA depot. Review the equipment-maintenance plan for guidance on warranty coordination or contact the USAMMA National Maintenance Program (NMP) (USAMMANMP@AMEDD.ARMY.MIL) for further guidance.

g. MMQC Messages and FCOs are distributed through USAMMA to all services. FCO instructions will be disseminated through normal MMQC messaging distribution channels. In accordance with AR 40-61, AR 750-10, and SB 8-75-S11, all BES must register to receive MMQC messages via email. MMQC message registration can be performed at the USAMMA website (<http://www.usamma.army.mil/assets/apps/listserv/messages.cfm>).

h. Test, Measurement, and Diagnostic Equipment (TMDE).

(1) TMDE requirements and authorizations shall be controlled in accordance with the unit's MTOE; or, based on a memorandum-of-authorization published by the command.

(2) Medical maintenance technicians will ensure that TMDE used in the repair and calibration of medical equipment is documented on the local TMDE support center master TMDE list and that it is calibrated at the proper service interval.

(3) Calibration requirements for TMDE are listed in AR 750-43 and TB 43-180. The TMDE scheduled service delinquency rate will be maintained at or below 2%.



(4) The unit TMDE coordinator will notify the section when an item is due for calibration. If, however, the maintenance technician discovers that an item's service is out of date, notification shall be made to the unit TMDE coordinator for immediate coordination of the scheduled service and assurance that the item is documented on the master TMDE list.

(5) Test, Measurement, and Diagnostic Equipment-Special Purpose (TMDE-SP) that is not supported by the local TMDE activity must be sent to the TMDE Support Center at Tracy Depot. These items include patient simulators, defibrillator analyzers, electrical safety analyzers, electrosurgical analyzers, and any other medical TMDE that cannot be calibrated by the local TMDE activity.

(6) TMDE that is submitted for calibration or repair must be clean and complete with all accessories (e.g., TMs, manufacturer service manuals, cables etc.) required for performing equipment calibration.

(7) TMDE that does not require calibration must have an attached DA Label 80 with the letters 'CNR' stamped on the label. This identifier marks the TMDE as: 'Calibration Not Required.'

i. Battery Maintenance Program.

(1) It is essential to take a proactive approach toward maintaining critical medical equipment items. Battery operated equipment like defibrillators, patient monitors, and other life saving medical equipment must receive special attention to ensure proper operation when connected to a Direct Current (DC) power source.



Improper battery maintenance may result in the malfunction of battery-operated medical equipment leading to patient death, injury, and/or equipment damage.

(2) Like any modern medical-equipment maintenance management program, the effectiveness of a battery maintenance program should be monitored to ensure that it is effective in reducing costs while maintaining equipment in a condition of optimal performance.

(3) An effective battery management program must include assignment of a responsible individual or group that:

- (a) Ensures batteries are charged following their interval-of-service return.
- (b) Orders additional battery spares or replacements.
- (c) Periodically reconditions batteries to extend battery service life.
- (d) Ensures safe disposal of hazardous-material upon completion of service life.

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(4) Because battery-management program implementation requirements differ among manufacturers, BES personnel must comply with each manufacturer's unique battery-management procedures in order to ensure proper operation of battery operated medical equipment. Once serviced, batteries should be labeled with the following information:

- (a) Current battery service date.
- (b) Last battery replacement date.
- (c) Next battery replacement date.
- (d) BES code or initials.

(5) Refer to Appendix G, entitled: Sample Battery Management Program (ZOLL Defibrillator), for an example of a manufacturer's recommended battery-management program applicable to sealed lead-acid batteries.

j. Tools Accountability.

(1) AR 735-5 defines durable property as personal property that is not consumed in use and does not require property book accountability. Because of the unique characteristics of durable property, however, some form of management control is required in conjunction with user issuance. Accordingly, all tools falling within a unit price range of \$50.00 to \$300.00 are classified as durable property that must be controlled and responsibly assigned; this is accomplished using a DA Form 2062. Refer to Appendix G, entitled: DA Form 2062 (Hand Receipt/Annex).

(2) Durable items that are components of Sets, Kits, or Outfits (SKOs) will be controlled using DA Form 2062 or component hand receipts.

(3) The medical maintenance shop foreman will sign for tool kits, individual tools, and tool sets from the PBO and issue them by sub-hand receipt to the individual BES.

(4) Durable items that are not components of an SKO will be controlled using hand receipts and sub-hand receipts. Durable items may additionally be controlled using the tool-room procedures described in accordance with AR 710-2, Paragraph 2-10i or j (as applicable) and DA Pam 710-2-1, Paragraph 6-3. Authorized personnel are posted on the tool room or cage-access roster:

(a) Tools issued for one day or less will be issued using DA Form 5519-R. Refer to Appendix I, entitled: DA Form 5519-R (Tool Sign-Out Log/Register).

(b) Tools issued for longer than one day but less than 30 days will be issued on a temporary hand receipt.

(c) Hand receipts will be completed in duplicate; refer to Appendix H, entitled: DA Form 2062 (Hand Receipt/Annex).

(d) Original hand receipt forms will be filed in the medical maintenance section; a copy of the receipt will be provided to the individual signing for the tool(s).



(e) Once an item has been cleaned and returned, both copies of the temporary hand receipt must be destroyed.

(5) All tools must be inventoried on a semi-annual basis.

(6) Lost or damaged tools will be listed on DA Form 2062 as a shortage annex and must be reported to the unit PBO.

(7) Tools lost or damaged due to neglect must be replaced by the individual responsible or a Financial Liability Investigation of Property Loss (FLIPL) will be initiated.

6. ORGANIZATIONAL MAINTENANCE PROCEDURES (SAMS-1E).

a. Medical Maintenance Operations. Table of Organization and Equipment (TOE) units use the SAMS-1E to conduct and manage medical-maintenance operations. Refer to Appendix I, entitled: SAMS Simplified Illustrated Data Flow for a high level of overview of SAMS data flow.

b. SAMS-1E Utilization. SAMS-1E provides the capability to plan and initiate scheduled services; open, close, and change the status of scheduled and unscheduled WOs; capture all costs associated with maintenance services, provide data for the Unit Status Report (USR), assign work by work center, evacuate and monitor work sent to support maintenance activities, and view WOs and USR in the Logistics Information Warehouse (LIW).

(1) Upon arrival at the BCT medical maintenance section, the BES should contact the Brigade Medical Maintenance Officer (BMMO) to discuss and develop a clear understanding of the correct SAMS-1E configuration for medical equipment and the procedures necessary to properly perform and capture medical maintenance services and data, as stated in Appendix K, entitled: SAMS-E Maintenance Management (AMEDD Specific). Any required SAMS-1E training should be coordinated through the BMMO. SAMS-1E functionality complies with current Army maintenance and materiel status requirements contained in the following publications.

- (a) DA PAM 750-8 - The Army Maintenance Management System (TAMMS)
- (b) DA PAM 700-138 - Army Logistics Readiness and Sustainability
- (c) AR 750-1 - Army Maintenance Policy
- (d) AR 220-1 - Unit Status Reporting

(2) BES personnel should be aware that the SAMS-1E and Defense Medical Logistics Standard Support (DMLSS) systems do not interface with Class VIII parts ordering applications.

(3) Units will formalize their support relationship with their support maintenance activities for proper setup of SAMS-1E at both the supported unit and the supporting unit.

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(4) For overall data entry, units should ensure property book medical-equipment items deemed as 'maintenance significant' by the USAMMA are entered in SAMS-1E.

(5) Upon completion of SAMS-1E training and data entry, units will coordinate with their field and support-level medical maintenance sections (e.g., Charlie Med, BSB, or IMMA) to synchronize service schedules.

(6) SAMS-1E will maintain medical equipment maintenance records at the unit level, including non-standard locally managed equipment on hand, PMCS, and scheduled or unscheduled services in accordance with TB MED 750-2 and the SAMS-1E operating system. When unit maintenance support requests are generated without BES support, the medical maintenance shop will coordinate scheduled services with those units and provide, at a minimum:

(a) A schedule for the supported unit's training schedule depicting when medical maintenance will be performed; including which section's equipment will be serviced.

(b) A copy of all completed scheduled and unscheduled services.

(c) A status update for open WOs including equipment mission capability status.

(7) Implementation of unit programs and readiness reporting.

(a) When all preparatory tasks to establish maintenance programs have been completed, units will use the SAMS-1E to generate PMCS WOs, update equipment status, and complete WOs.

(b) Units will begin executing scheduled and unscheduled services in coordination with their field-level medical maintenance sections. Scheduled services support will be performed in accordance with TMs, manufacturer service manuals, and other policies; but, will minimally be performed annually in a garrison environment. Deployed conditions and Operational Tempo (OPTEMPO) may require more frequent service intervals; those decisions, however, will be made upon deployment.

(8) Reporting requirements.

(a) LINs listed in AR 700-138, Appendix C, have been designated mission-essential equipment and systems. Current lists of reportable equipment and authorized subsystems may be obtained from Logistics Support Activity (LOGSA) Master Maintenance Data File (MMDF), Table B-1.

(b) In accordance with AR 700-138, Appendix C, all Active Army (AA) and Reserve Component (RC) units operating specific equipment listed within the regulation will submit materiel condition status reports.

(c) Commanders may use DA Form 2406 for local use. Any equipment items required for reporting through local commands that are not identified in AR 700-138, Appendix C must be reported separately from required DA Form 2406 submissions.



(9) Frequency of reports.

(a) All AA units will issue monthly reports on DA Form 2406 covering a 1-month period ending the 15th day of each month.

(b) All equipment LINs that are authorized on the MTOE, Table of Distribution and Allowances (TDA), or are on-hand during the last day of the reporting period; and, are listed on the unit property book as defined in AR 700-138, Appendix C will be reported on DA Form 2406.

7. SCHEDULED AND UNSCHEDULED SERVICE PROCEDURES.

a. Scheduling of Scheduled Services.

(1) Scheduled maintenance is defined as those scheduled actions performed in an attempt to retain an item in a specified condition by providing systematic inspection, detection, and prevention of apparent failures. Scheduled services are to be planned and performed at intervals specified by TM or manufacturer service manual recommendation. In addition, the MMDF will be downloaded and used to assist in determination of SAMS maintenance-plan assignments. All required medical-devices assigned to (or within) the activity; including devices that are borrowed, loaned, leased etc., will be loaded into the current AIS for tracking purposes and will be closed when completed.

Note

If a formal tracking system for scheduled services is not in place, some form of tracking must be implemented.

(2) TB MED 750-2 generally classifies scheduled workload as falling into the following categories:

(a) INSP - Inspection encompasses both electrical safety and performance inspection actions. Inspections ensure that impacted devices perform in accordance with OEM design specifications and as stated in published in USAMMA TMs or MACs.

(b) PM - Preventive Maintenance (PM) is the scheduled care, servicing, inspection, detection, and correction of minor faults before these faults develop to become unscheduled services (CM) actions.

(c) CL - Calibration (CL) is the comparison of a medical system or device of unverified accuracy to a medical system or device of known accuracy for the purpose of detecting and (if necessary) correcting required performance specification deviations.

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(d) SPR - Scheduled Parts Replacement (SPR) is a scheduled maintenance event that may include replacement of expendable service items such as batteries, filters, rubber goods, desiccant, O-rings, etc.

Note

Some basic medical devices within the Army inventory may be categorized as 'No Maintenance Required' (NMR). This category applies to equipment that normally does not require scheduled maintenance based on a determination that it poses 'No Significant Risk' (NSR); but, is included in the equipment inventory to document services.

(3) Procedures and performance of scheduled services.

(a) One copy of all medical maintenance documentation will be provided to the hand receipt holder by medical maintenance on the 15th of the month prior to services being rendered. The hand receipt holder must sign the documentation acknowledging receipt and understanding of responsibilities. Documentation includes a 'Notification of Scheduled Services Memorandum' and the 'Unit Scheduled Service Listing.'

(c) All services will be documented on DA Form 5988-E, Automated Equipment Maintenance and Inspection Worksheet, using the format specified in TB 38-750-2.

(d) As an alternative, DA Form 2404; refer to Appendix B, entitled: DA Form 2404 (Equipment Inspection Maintenance Worksheet), may be used to document scheduled services with the following exceptions: Within column b, responsibility for the performance of corrective actions will be annotated as being either the equipment operator (OM) or Medical Maintenance Section (MM). Column c must include the nomenclature and Serial Number (SN) of each item serviced in that section. Within column d, the corrective action required will be indicated (e.g., clean, replace, order etc.) when the corrective action is to be accomplished by the equipment operator. Any deficiencies listed on DA Form 5988-E, Automated Equipment Maintenance and Inspection Worksheet or DA Form 2404 that require operator-level replacement of components, parts, or accessories must include the National Stock Number (NSN) and/or manufacturer's Part Number (PN) for the items. The document number confirming that the item was ordered and recorded must additionally be provided in the corrective action column (Column d) by the operator ordering operator-replaced parts in accordance with AR 40-61.

(e) During the performance of scheduled services, minor repairs beyond operator capability will be performed by the BES. Upon completion of these minor repairs, the BES will initial the corrected blocks of DA Form 5988-E and DA Form 2404.

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(f) When extensive repairs are expected, the BES should notify the user to submit a work request. When the corrective action is to submit a WO, ensure the hand receipt holder or designated representative responsible for the equipment is aware of the status of their equipment.

(g) Upon completion of scheduled services within each section, the medical maintenance manager will prepare a scheduled services report, by date range, for the month due; printed at the beginning of the month, with tech code and date completed in the margins. This report will be furnished to the hand receipt holder at the end of the month.

(h) The medical maintenance manager will file and maintain a duplicate of the scheduled services report for a period of 1-year.

(i) Upon completion of scheduled services within each section, items that did not receive services will be identified along with the reason services were not performed. A completed scheduled services memorandum identifying the items unavailable for services along with a copy of the DA Form 5988-E, Automated Equipment Maintenance and Inspection Worksheet or DA Form 2404, Equipment Inspection and Maintenance Worksheet will be provided to the hand receipt holder and the Commander. For equipment that did not receive services due to loss, the scheduled services memorandum will be forwarded to the owning unit's PBO and the safety officer listing all lost items so that appropriate property accountability actions are taken and any safety concerns can be addressed.

(j) Medical maintenance personnel performing scheduled services in each section will consult with equipment operators to ensure they are familiar with unit medical-maintenance policies and procedures.

(4) Inspection/Electrical Safety Procedures.

(a) A continued effort will be made to provide an electrically safe healthcare environment for patients, visitors, and staff.

(b) All medical equipment will receive a comprehensive electrical safety test after repairs or modifications have been performed.

(c) If an electrical system or equipment item fails to meet required electrical safety thresholds defects, recommendations, and associated maintenance actions must be properly recorded, in accordance with TB 38-750-2. This is accomplished using one of the following forms, as appropriate:

- Use DA Form 5621-R (Leakage Current Measurements, General) to document general medical-equipment.
- Use DA Form 5622-R (Leakage Current Measurements, EKG) specifically to document electrocardiograph devices and their monitors.

(d) A WO must be initiated to correct any discovered electrical defect. Upon completion of electrical repairs, attach the completed WO to the appropriate current leakage form and file for a period of 1-year.

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(5) CVC Procedures.

(a) CVC services performed on X-Ray equipment must be recorded, in accordance with TB 38-750-2.

(b) Document all supporting CVC X-Ray findings on DD Form 2164, X-Ray Verification/Certification Worksheet (Refer to Appendix E). Attach a separate sheet of paper specifying the manufacturer, model, SN, and date of calibration expiration for all TMDE items used during the performance of CVC services. All documentation will be retained on file until completion of the next scheduled CVC services requirement.

(c) CVC services will be performed on defibrillators semiannually using a defibrillator analyzer and must be recorded in accordance with TB 38-750-2.

(d) Document all supporting CVC defibrillator inspection findings on DA Form 5624-R, DC Defibrillator Inspection Record.

(e) Record all supporting CVC defibrillator energy output findings on DA Label 175 and affix to the unit. Refer to DA Label 175, Defibrillator Energy Output Certification (Appendix C). All documentation will be retained on file until completion of the next scheduled CVC services requirement.

Note

In accordance with TB 43-180, calibration of patient scales (other than official medical treatment facility or MEDDAC scales used for weight determination) is not required. A unit screening inspection may be performed upon request from hospital staff but DD Form 2163, will not be affixed to verify or certify calibration.

(f) Upon completion of CVC services, DD Form 2163 (Medical Equipment Verification/Certification) must be used to document system or device verification and certification; affix label to unit.

(g) Document CVC services completion in the SAMS-1E or manual system history.

b. **Unscheduled Services Program.**

(1) Emergency (03), Priority (06), and Routine (12) medical equipment repairs may be performed in shop or on site at the equipment location.



- (2) Unscheduled services include medical equipment installation or assembly.
- (3) Unscheduled services will be submitted using DA Form 5988-E, Automated Equipment Maintenance and Inspection Worksheet, DA Form 2404, Equipment Inspection and Maintenance Worksheet, and DA Form 2062, Hand Receipt/Annex from the requesting unit.
- (4) **(INSERT UNIT)** medical maintenance section has the responsibility for providing organizational-level maintenance to MTOE medical units within **(INSERT UNIT)** without organic MERs and direct-level maintenance to MTOE medical units with organic MERs.
- (5) When maintenance support from the **(INSERT UNIT)** medical maintenance is resource constrained, contact **(INSERT UNIT)** to coordinate maintenance support.
- (6) All efforts to accomplish medical maintenance missions at the unit level will be exhausted prior to issuing a request for support.
- (7) All medical equipment submitted for organizational-level support will be documented on a DA Form 2404; refer to Appendix B, entitled: DA Form 2404 (Equipment Inspection Maintenance Worksheet). Medical maintenance will generate a DA Form 5988-E, Automated Equipment Maintenance and Inspection Worksheet; a copy of the receipt will be furnished to the unit. Medical maintenance will retain a file copy of DA 5988-E along with original DA Form 2404 from the equipment hand receipt holder.
- (8) All medical equipment submitted for direct-level support will be documented on a DA 5988-E, Automated Equipment Maintenance and Inspection Worksheet. Medical maintenance will generate a DA Form 5990-E; a copy of the receipt will be furnished to the unit. Medical maintenance will retain a file copy of DA Form 5990-E along with original DA 5988-E from the equipment hand receipt holder.

8. REPAIR-PARTS PROCEDURES.

a. Repair Parts and Shop-Stock Management.

- (1) Standard and nonstandard repair parts will be managed in accordance with guidance provided in AR 40-61, AR 710-2, TB MED 750-2, and this SOP.
- (2) Shop stock (demand supported stock), mission essential, bench stock, and minimum-order repair parts are authorized in accordance with AR 40-61. When available, an authorized maintenance AIS will be used to manage and account for repair parts.

b. Shop-Stock Regulation and Authorization.

- (1) AR 710-2, Paragraph 2-23 refers to shop stock as demand-supported repair parts and consumable items that are stocked and authorized by the maintenance activity and used to accomplish maintenance repairs and scheduled services.

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(2) DA Pam 710-2-2, Paragraph 4-2 states that Authorized Stockage List (ASL) is a controlled but flexible list of repair parts that are proven by experience to warrant stockage. It may also contain other items with a projected need (e.g., Line Replaceable Units (LRUs) and SPRs).

(a) In accordance with AR 750-1, LRUs are cataloged as shop stock and could be a combination of components or modules installed in a medical device or system that is replaceable in the operational environment as far forward as possible in a garrison environment, under field or combat conditions; or, within the local healthcare activity. Examples of LRUs include: printed circuit boards, X-Ray tube-heads, modular housing assemblies or components, major sub-components, etc. When designated with a SN, LRUs will be properly accounted for in the medical supply stock record account. Equipment MACs and maintenance plans will identify those maintenance activities responsible for stocking LRUs.

(b) AR 40-61, Chapter 6 states that the maintenance activity will acquire SPR prior to required CVC service or PMCS as recommended by TMs, manufacturer service manuals, MAC, or institutional knowledge.

(c) SPR considerations include repair parts requiring periodic replacement during the performance of scheduled services. These parts are often identified in manufacturer service manuals as requiring replacement on a fixed-performance schedule. These parts do not typically qualify as shop stock or shop stock in the quantities required. When stocked, the end item application field of the applicable information management system repair parts master record will indicate PMCS.

(d) At least one demand must have occurred within a subsequent 180-day period to retain a repair part on stock after initial stockage. Review and inventory shop stock every 180 days; document inventory completion using authorized procedures.

(e) The Commander or Commander's designee must annually approve and sign the shop-stock listing authorizing stockage of the repair parts in accordance with AR 40-61, Paragraph 6-19 and DA Pam 710-2-2, Paragraph 23-3. The approved shop stock listing must be maintained by the maintenance shop until superseded. Shop stock will be inventoried quarterly; inventory results will be documented and minimally retained until the next scheduled inventory.

c. Mission Essential Repair Parts (MERPs).

(1) MERPs are a select, controlled level of repair parts authorized to be on-hand to meet an un-programmed maintenance requirement when repair of a specific medical device cannot be accomplished in a specified period of time; and, where repair parts do not qualify as shop stock.

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(2) MERPs are non-demand supported items with expected use. MERP and seasonal items that do not qualify under any other stockage criteria will be kept on an ASL. The Requisitioning Objective (RO) for mission essential low-density end item repair parts will be the quantity needed to repair one piece of equipment; the Re-order Point (ROP) will be zero. Determination of seasonal RO items will be based upon the level of expected use. Commanders will establish the minimum level necessary to meet readiness goals; subject to annual ASL revalidation.

(3) In accordance with AR 710-2, Paragraph 2-21, DA Pam 710-2-1, Paragraph 8-1 and DA Pam 710-2-2, Paragraph 4-2, MERPs are controlled but flexible. Select repair parts are proven by experience to meet the essential repair-by-fault situation; and, maintain the customer's FMC needs.

(4) MERPs are necessary to:

- (a) Ensure proper functioning of life saving medical devices.
- (b) Sustain medical devices for which the manufacturer no longer supplies parts.
- (c) Maintain new medical devices until demand data can be established.
- (d) Replace frequently used parts that take greater than 30-days to acquire.

(5) Medical maintenance managers are responsible for using discretion in the selection of items deemed mission essential. Parts purchased locally and available within 24 hours should not be considered mission essential.

(6) Maintain minimal quantities of individual MERPs; enter MERP quantities into the authorized AIS parts module.

(7) Review and inventory MERPs every 180 days; document the completion of inventories using applicable information management system procedures.

(8) The Commander or Commander's designee must annually approve and sign the MERP listing. The Commander may authorize stock of parts based solely on the premise that MERP items are deemed essential for mission accomplishment. The approved MERP listing must be maintained by the maintenance shop until superseded.

d. Bench-Stock Management.

(1) Bench stock will be managed in accordance with AR 710-2 and DA Pam 710-2-2.

(2) AR 710-2, Paragraph 2-24 and DA Pam 710-2-2, Paragraph 23-2 describes bench stock as low cost, high use, consumable items used by maintenance personnel at an unpredictable rate. Bench stock will not include repair parts unique to an end item of equipment and typically includes: common hardware (nuts, bolts, and washers), wire, resistors, transistors, capacitors, tubing, hose, rope, webbing, thread, sandpaper, gasket material, sheet metal, seals, oil, grease, repair kits, etc.

(3) The maintenance officer reviews, approves, and signs the bench stock listing on a semiannual basis which then serves as authorization to stock bench-stock items.

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(4) Bench stock costs are included in the direct labor-rate computation. Accounting for bench stock parts on individual work requests is required in order to provide an audit trail.

(a) Identify, account, and document all bench stock parts identified on the WO.

(b) Annotate the WO parts-cost column with the designation N/C indicating 'No Charge.' The SAMS-1E requires no additional maintenance record entry for bench stock costs.

e. Minimum Order (MO).

(1) Shop stock purchased as a result of MO requirements exceeding the stock objective; or, not demand supported are authorized to be retained in shop stock and reduced.

(2) DA Form 3318, Record of Demands, for these items will be annotated indicating that the item from the vendor is MO along with the minimum dollar order (e.g., MO \$100.00).

(3) Procurement of MO repair parts should be ordered through the USAMMA under the AMEDD Centralized Repair Parts Program (ACRPP). USAMMA will incur all additional costs associated with MO requirements.

(4) All Direct Reporting Units (DRUs) have been designated as a Force Activity Designator (FAD) 02 unit.

(5) The medical maintenance section can use one of three priorities when requisitioning parts; these include priority 02, 05, and 12.

(6) While deployed, all repair parts should be ordered as priority 02 or 05.

(7) The individual certifying priority 02 and 05 requisitions will initial column h of DA Form 2064; refer to Appendix L, entitled: Document Register for Supply Actions, for each request submitted.

f. Request for Repair Parts.

(1) The WO may be used to request repair parts that are known to be stocked in shop supply.

(2) All requests for repair parts will be reviewed, approved, and initialed by the appropriate authority.

(3) The local parts request form will be used to order repair parts that are not stocked in shop supply.

(4) The parts request form will be attached to the WO and filed in the awaiting parts file once the repair part has been ordered.

(5) All repair-part requisitions will be ordered on the approved parts request form through the BMSO.

(6) While deployed, DA Form 5988-E, Automated Equipment Maintenance and Inspection Worksheet; or, DA Form 2404, Equipment Inspection and Maintenance Worksheet, and DA Form 5990-E WO will be used to order all class VIII repair parts through the designated BMSO.

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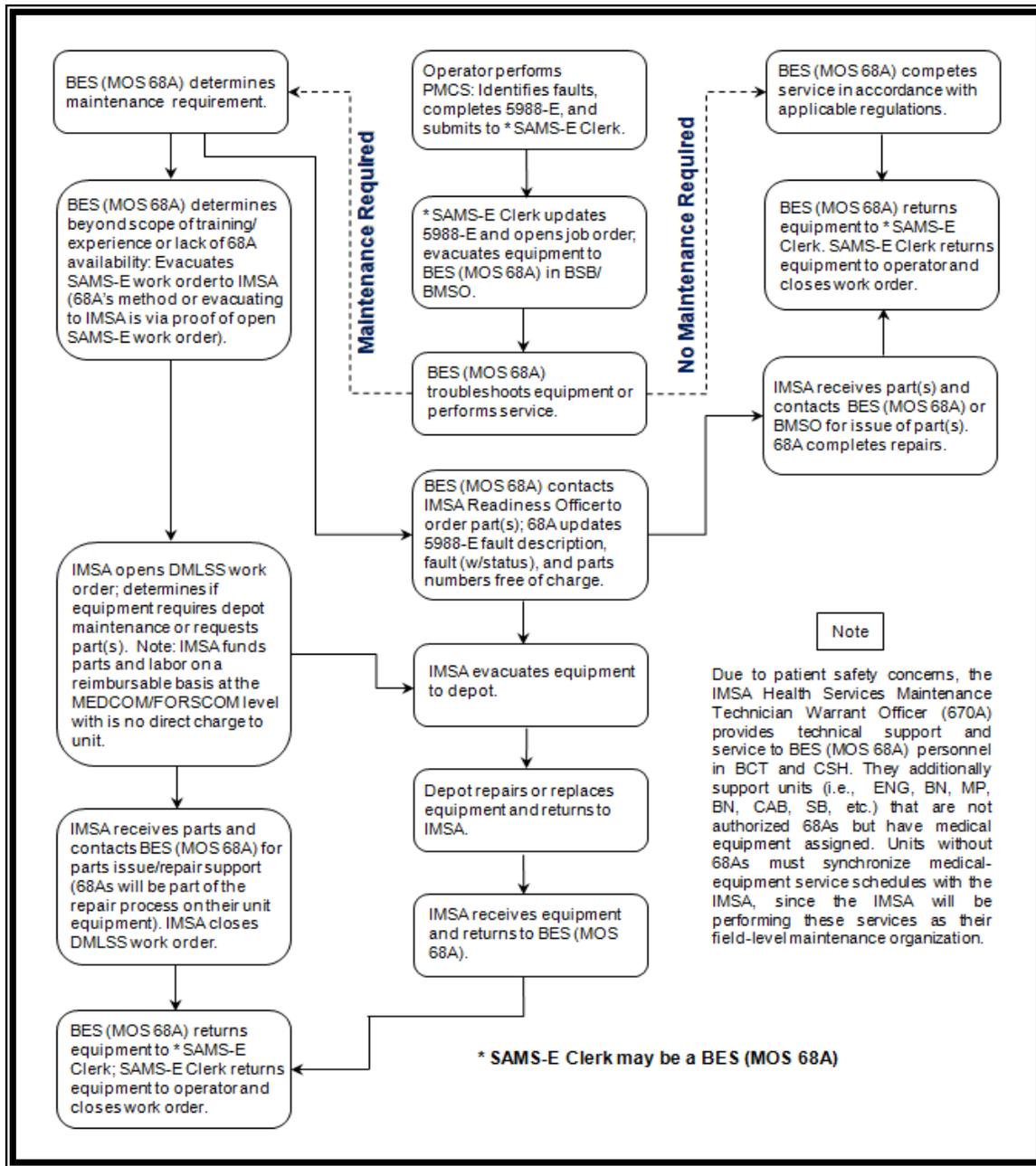
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(7) All class IX repair parts should be ordered through the TAMMS or Prescribed Load List (PLL) clerk.

(8) Once the repair part has been ordered, it must be logged on the document register with the applicable document number.



APPENDIX A
Defense Medical Logistics Standard Support (DMLSS) Work Order Flow Chart





APPENDIX C

DA Label 175 (Defibrillator Energy Output Certification Label)

(TB 38-750-2)	
DEFIBRILLATOR ENERGY OUTPUT CERTIFICATION	
INDICATED ENERGY OR CONTROL SETTING (WATT-SECONDS)	ENERGY DELIVERED TO A 50 OHM LOAD (WATT-SECONDS)
5 / 10	5.1 / 10
15 / 20	15 / 20
30 / 50	30 / 50
70 / 100	70.2 / 100.3
150 / 200	150 / 200.1
250	252
300	301
360	362
DATES	
CERTIFICATION JAN 08	EXPIRATION JUL 08
INSPECTOR SSG L. MEZQUIA, M1234	
DA LABEL 175 Jan-87	

DA Label 175 (Defibrillator Energy Output Certification Label)

- a. DA Label 175 provides a record for certification of energy output and is used to document energy output on all defibrillators.
- b. The BES who conducts a certification of energy output and performance inspection will complete the label as follows:
 - (1) Indicated Energy or Control Setting. Enter the energy level selected on the defibrillator control setting.

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(2) Energy Delivered to a 50 Ohm Load. Measure and record delivered entry levels in joules (Watt-Seconds) adjacent to the corresponding control setting as performed in step (1), above.

(3) Repeat steps (1) and (2) for all output levels indicated on the defibrillator control.

(4) Dates. Enter the date of certification and the expiration date (every six months).

(5) output certification.

c. Affix DA Label 175 as close as possible to the defibrillator control panel. When the label cannot be affixed to equipment because the equipment item is too small; or, because its intended purpose prohibits label adhesion, the medical section where the equipment operates must maintain a log book in the immediate vicinity containing the applicable medical device label.



APPENDIX D

DD Form 2163 (Medical Equipment Verification/Certification)

MEDICAL EQUIPMENT VERIFICATION/CERTIFICATION							
1. I.D. NUMBER G2975		2. MODEL NO. LP-9P		3. SERIAL NO. 0105957			
4. AUTHORITY AR 40-61		5. LEVEL I		6. FREQUENCY S			
UIC	CERTIFIED BY	DATE COMPL	DATE DUE	UIC	CERTIFIED BY	DATE COMPL	DATE DUE
A47	H3010	0101	0701				
A47	H3010	0701	0102				

DD FORM 2163, 1 NOV 70

1- Admin # (exp. 557T01)
 2- MLD # (exp. LP-10)
 3- Serial # (exp. 01010101)
 4- Authority (is. AR 40-61)
 5- Level (exp. I)
 6- Frequency (exp. S)
 UIC: is your Unit UIC (is. WBM4AA)
 Certified By: Last initial and last 4 of SSN (exp. H3010)
 Date Format: MMY (exp. 0208)

DD Form 2163 (Medical Equipment Verification/Certification)

a. The DD Form 2163 label will be affixed to all items of biomedical equipment requiring verification or certification to:

- (1) Certify that the equipment has been verified or certified to the required accuracy. Indicate the date the equipment was verified or certified and when the next verification or certification is scheduled.
- (2) Identify the facility that provided verification or certification services and the BES who performed this action.
- (3) List six consecutive certifications or verification actions before replacement is required.

b. DD Form 2163 is only to be used by and distributed to DOD medical activities; distribution will be limited to these activities.

c. The BES who performs verification or certification action will complete DD Form 2163 as indicated below.

- (1) ID Number. Enter equipment ID number when assigned by command directive.
- (2) Model No. Enter the equipment model number as assigned by the manufacturer; if none is available, use the locally assigned model number.
- (3) Serial No. Enter the equipment serial number assigned by the manufacturer; if none is available, use the locally assigned serial number.
- (4) Authority. AR 40-61

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- (5) Level. Enter the proper verification or certification-level code as shown below.
 - (a) Code D (depot). Verification or certification performed by medical depot personnel.
 - (b) Code I (maintenance). Verification or certification performed by in house medical maintenance personnel.
- (6) Frequency. Enter verification or certification frequency code as follows:
 - (a) Code M. Identifies an item requiring 30-day verification or certification.
 - (b) Code Q. Identifies an item requiring 90-day verification or certification.
 - (c) Code S. Identifies an item requiring 180-day verification or certification.
 - (d) Code A. Identifies an item requiring 360-day verification or certification.
- (7) UIC. Enter the Unit Identification Code (UIC) of the activity providing the verification or certification service; or, the Federal Supply Code for Manufactures (FSCM) number when the manufacturer service is provided by a commercial source.
- (8) Certified By. Enter the first initial of the last name followed by the last four numerals of the certifier's SSN.
- (9) Date Complete. Enter the calendar date on which the verification or certification was completed.
- (10) Date Due. Enter the calendar date on which the next verification or certification procedure is due.
 - d. Where possible, affix DD Form 2163 to the front of the calibrated instrument or in a visible place that can be easily identified. When the label cannot be affixed to the equipment because the item is too small; or, because its intended use prohibits label adhesion, the medical section where the equipment operates must maintain a log book in the immediate vicinity containing the applicable medical device label.

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APPENDIX E
DD Form 2164 (X-Ray Verification/Certification Worksheet)

X-RAY VERIFICATION/CERTIFICATION WORKSHEET <i>(Use additional sheet for remarks. Identify item by number.)</i>		ACTION		
		REQUIRED	NOT REQUIRED	TAKEN
LOCATION <i>(Include Building and Room Number)</i>		DATE AND TIME OF SERVICE		DATE NEXT SERVICE DUE
I. EQUIPMENT IDENTIFICATION				
COMPONENTS	MANUFACTURER	MODEL <i>(Include type, style, size, focal spots, etc.)</i>		SERIAL NUMBER <i>(Housing)</i>
1. CONTROL NO. 1 <i>(Master Control)</i>				
2. CONTROL NO. 2 <i>(Room Control)</i>				
3. RADIOGRAPHIC TUBE				
4. RADIOGRAPHIC TUBE <i>(Auxiliary tube)</i>				
5. FLUOROSCOPIC TUBE				
II. VISUAL INSPECTION OF EQUIPMENT				
ITEMS FOR VISUAL INSPECTION	ACTION			INITIAL AND DATE
	NOT REQUIRED	TYPE REQUIRED	ACTION TAKEN	
6. CERTIFICATION LABELS ARE AFFIXED AND VISIBLE				
7. STEEL COUNTERWEIGHT CABLES				
8. SHOCK-PROOF HIGH TENSION CABLES				
9. TUBE HANGER ASSEMBLY AND YOKES				
10. INDICATOR LIGHTS				
11. X-RAY TUBES FOR OIL LEAKS				
III. OPERATIONAL TESTING OF EQUIPMENT				
ITEMS FOR VISUAL INSPECTION	ACTION			INITIAL AND DATE
	NOT REQUIRED	TYPE REQUIRED	ACTION TAKEN	
12. INTERLOCKS				
13. LOCKS				
14. BACKUP SAFETY TIMERS				
15. TABLE AND TUBESTAND MOTION				
16. BEAM LIMITING DEVICES <i>(Manual and automatic mode)</i>				
17. TABLE ANGULATION LIMIT SWITCHES				
18. DOES TUBE OVERLOAD PROTECTION CIRCUIT DISABLE EXPOSURE CIRCUIT? <input type="checkbox"/> YES <input type="checkbox"/> NO				
19. IS THE PRODUCTION OF X-RAYS INHIBITED UNTIL ANODE IS UP TO SPEED? <input type="checkbox"/> YES <input type="checkbox"/> NO				
20. DOES BRAKE ON HIGH SPEED STATOR OPERATE CORRECTLY? <i>(Record coast down time for anode after exposure _____)</i> <input type="checkbox"/> YES <input type="checkbox"/> NO				
IV. RADIOGRAPHIC CERTIFICATION				
21. SINGLE PHASE LINE VOLTAGE AND LINE DROP		22. THREE PHASE LINE VOLTAGE AND LINE DROP		
NO LOAD LINE VOLTAGE		NO LOAD LINE VOLTAGE		
A. L 1 TO GROUND	VOLTS	A. PHASE A TO B		VOLTS
B. L 2 TO GROUND		B. PHASE B TO C		
C. L 3 TO L 2		C. PHASE A TO C		
LINE DROP TEST		LINE DROP TEST		
D. L 1 TO L 2	VOLTS			VOLTS
23. TRANSFORMER BALANCE ¹		D. PHASE A TO B		
A. ANODE VOLTAGE TO GROUND AT 100 KVP		E. PHASE B TO C		
B. CATHODE VOLTAGE TO GROUND AT 100 KVP		F. PHASE A TO C		
24. EXPOSURE TIMER TEST				
TIME SETTING ON CONTROL				
ACTUAL TIME MEASURED				
¹ Only required annually.				

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Reset

Adobe Professional 7.0

DD Form 2164 (Front)

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25. KILOVOLTAGE AND MILLIAMPERAGE VERIFICATION								
CONTROL SETTINGS	KILOVOLTAGE							
	20	40	60	80	100	120	140	150
MA								
MA								
MA								
MA								
MA								
MA								
MA								
MA								
26. PENETROMETER FILM DENSITY			SATISFACTORY			UNSATISFACTORY		
27. RADIOGRAPHIC PHOTOTIMER TEST (Record MAS)								
			BUCKY		CHEST		OTHER	
A. NORMAL								
B. LIGHT								
C. DARK								
V. FLUOROSCOPIC CERTIFICATION								
28. KILOVOLTAGE VERIFICATION				29. AUTOMATIC BRIGHTNESS CONTROL				
MA SETTING	KILOVOLTAGE PEAK		<input type="checkbox"/> SATISFACTORY <input type="checkbox"/> UNSATISFACTORY					
	FLUORO	ACTUAL						
1.0	40							
1.0	60							
30. SPOT FILM KILOVOLTAGE VERIFICATION				KILOVOLTAGE PEAK				
				SPOT FILM SETTING		MA		ACTUAL
1.0	80		60 @	_____	MA			
1.0	100		80 @	_____	MA			
1.0	120		100 @	_____	MA			
1.0	MAXIMUM		120 @	_____	MA			
31. SPOT FILM MILLIAMPERAGE AND SPACE CHARGE VERIFICATION								
FIXED MA STATION		LOW KVP		ACTUAL MILLIAMPERAGE AT				
				NEUTRAL KVP		HIGH KVP		
32. FLUOROSCOPIC MILLIAMPERAGE VERIFICATION								
MA STATION	NEUTRAL KVP SETTING	ACTUAL MA		33. FLURO TIMER TEST (Timer set at 5 minutes)				
				A. WARNING DEVICE ALARMED AT _____ MINUTES				
				B. TIMER TERMINATED AT _____ MIN _____ SEC				
				C. DID TIMER TERMINATE EXPOSURE? <input type="checkbox"/> YES <input type="checkbox"/> NO				
				D. IS TIMER TIMING CORRECTLY WHEN CHECKED AGAINST CALIBRATED STOP WATCH? <input type="checkbox"/> YES <input type="checkbox"/> NO				
34. SPOT FILM TIMER TEST			SATFY	UNSATFY	35. PHOTOTIMER TEST			
A. SHORT TIME					RECORD MAS			
B. MEDIUM TIME					A. NORMAL SETTING			
C. LONG TIME					B. LIGHT SETTING (-)			
					C. DARK SETTING (+)			
INSPECTED BY (Type or print name and grade)				SIGNATURE				

DD Form 2164 Reverse, NOV 78

Reset

DD Form 2164 (Back)

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DD Form 2164 (X-Ray Verification/Certification Worksheet)

a. The DD Form 2164 provides a record of X-Ray verification, certification, and corrective action taken to assure compliance.

b. DD Form 2164 will be used to record actions taken in conjunction with verification and certification of X-Ray systems.

c. The BES who performs the verification or certification action will complete DD Form 2164 as indicated below:

(1) Heading. Enter the name and location of the unit or activity including building and room number where the system is located. Enter the Work Order (WO) number, Date and Time of Service, and the Date Next Service is Due.

(2) Action. Complete by placing an X in the appropriate block when the services have been completed.

(3) Section I, Equipment Identification. Enter the Manufacturer, Model, and Serial Number for each applicable block (a minimum of Control 1 and Radiographic Tube).

(4) Section II, Visual Inspection of Equipment. Visually inspect the items listed. If no action is needed, place an X in the Not Required column. If action is required, annotate the Type Required. When the required action has been performed, indicate this in the Action Taken column; enter Initials and Date.

(5) Section III, Operational Testing of Equipment. Perform operational checks on the items listed. If no operating problems are found, place an X in the Not Required column. If action is required, annotate the Type Required. When the required action has been performed, indicate this in the Action Taken column; enter Initials and Date.

(6) Section IV, Radiographic Certification. Perform the indicated procedures and enter the results in the spaces provided. Record line voltage in item 21 (single phase) or item 22 (three phase) as appropriate.

(a) Item 23, Transformer Balance is performed annually.

(b) Item 24, Exposure Timer Test, indicate the Time Setting on Control and the Actual Time measured, appropriately.

(c) Item 25, Kilovoltage and Milliamperage Verification, The kilovoltage (kVp), is printed in the top blocks. Milliamperage, as indicated on the control panel, is to be entered only in the preprinted blocks on the extreme left side of form. The highest mA indicated on the control panel will be entered in the upper most block, all other blocks will have the mA indicated in descending value with the bottom block containing the lowest setting. The blocks containing the diagonal lines will be used for recording the actual mA and kVp station on the control. The top portion is kVp and the bottom portion is mA.

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(d) Item 26, Penetrometer Film Density, Enter a check in the correct box identifying the state of film density (satisfactory/non- satisfactory).

(e) Item 27, Radiographic Phototimer Test, Indicate the type of exposure variation received with film in the table Bucky, Chest unit, or Other photo timing device by exposing a phantom at 90 kVp, 200 mA with the density controls selected to Dark, Normal, and Light. Record the actual mA received in the appropriate block.

(7) Section V, Fluoroscopic Certification. Perform the indicated procedure and enter the remarks in the spaces provided.

(8) Inspected By. Print Name, Grade, and Organization in this block; Sign the form in the space provided.

(9) Disposition. DD Form 2164 will be maintained on file, pending the completion of the next certification.



APPENDIX F
Material Condition Code Tags

WARNING: UNSERVICEABLE TAG-MATERIEL (DD Form 1577)

NSN, PART NO. AND ITEM DESCRIPTION

UNSERVICEABLE (CONDEMNED) TAG - MATERIEL

INSPECTION ACTIVITY

CONDITION CODE

REASON OR AUTHORITY

SERIAL NO./LOT NO.

UNIT OF ISSUE

QUANTITY

INSPECTORS NAME OR STAMP AND DATE

REMARKS

DD FORM 1577

UNSERVICEABLE (CONDEMNED) TAG-MATERIEL (DD Form 1577)

1. DD Form 1577 (Unserviceable [Condemned] Tag - Material)

a. The DD Form 1577 (RED) label will be affixed to all biomedical equipment items requiring a Technical Inspection (TI) that is determined to be Condition Code H (Condemned).

b. The BES performing the verification or certification action will complete DD Form 1577 as indicated below.

(1) NSN, Party No. and Item Description - Enter the National Stock Number (NSN), the item's part number, and the item's noun nomenclature (name).

(2) Inspection Activity - Enter the unit and UIC (e.g., 47th BSB/WH98C0).

(3) Condition Code - Enter Condition Code H.

(4) Reason or Authority - Enter the reason for the condemned condition (e.g., repairs exceed MEL) and AR 40-61.



- (5) Serial No./Lot No. - Enter the item's serial number identified on the data plate.
- (6) Unit of Issue - Enter the unit of issue, (e.g., EA, GR. etc.).
- (7) Quantity - Enter item quantity depicted by this tag (e.g., 1, 2, 3).
- (8) Inspector's Name or Stamp and Date - Self explanatory.
- (9) Remarks - Enter remarks in accordance with AR 40-61 and TB MED 750-2, the TI Work Order Number, and the fault/malfunction that led to the condemnation.

WARNING: UNSERVICEABLE REPAIRABLE TAG-MATERIEL (DD Form 1577-2)	MNF. PART NO. AND ITEM DESCRIPTION	UNSERVICEABLE (REPAIRABLE) TAG - MATERIEL		
		INSPECTION ACTIVITY	CONDITION CODE	
		REASON FOR REPAIRABLE CONDITION		
		_____ _____		
	SERIAL NO./LOT NO.	UNIT OF ISSUE	REMOVED FROM	
	CONTRACT OR PURCHASE ORDER NO.	QUANTITY	INSPECTOR'S NAME OR STAMP AND DATE	
	REMARKS			
UNSERVICEABLE (REPAIRABLE) TAG-MATERIEL (DD Form 1577-2)				

2. DD Form 1577-2 (Unserviceable [Repairable] Tag-Materiel)

a. The DD Form 1577-2 (GREEN) label will be affixed to all biomedical equipment items requiring a TI that is determined to be Condition Code F (Repairable).

b. The BES who performs the verification or certification action will complete DD Form 1577-2 as indicated below.

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- (1) NSN, Part No., and Item Description - Enter the National Stock Number (NSN), the item's part number, and the item's noun nomenclature (name).
- (2) Inspection Activity - Enter the unit and UIC (e.g., 47th BSB/WH98C0).
- (3) Condition Code - Enter Condition Code F.
- (4) Reason for Repairable Condition - Enter the reason for the repairable condition, TI for Turn-In or requested inspection.
- (5) Serial No./Lot No. - Enter the item's serial number identified on the data plate.
- (6) Unit of Issue - Enter the unit of issue, (e.g., EA, GR. etc.).
- (7) Removed From - Enter the serial number and model of the next higher assembly, if the unit is a component of a system.
- (8) Contract or Purchase Order No. - Enter UNK in this field.
- (9) Quantity - Enter the item quantity depicted by this tag (e.g., 1, 2, 3).
- (10) Inspector's Name or Stamp and Date - Self explanatory.
- (11) Remarks - Enter remarks in accordance with 40-61 and TB MED 750-2, the TI Work Order Number, and the fault/malfunction that led to part replacement.



APPENDIX G

Sample Battery Management Program (ZOLL Defibrillator)

Battery Care

WARNING

- Regular use of partially charged battery packs without fully recharging between uses will result in permanently reduced capacity and early battery pack failure.

Safe, reliable use of the system requires a well designed battery management program to ensure that adequate battery power is always available.

ZOLL has developed the ZOLL Battery Management Program booklet. It includes information for determining your particular battery requirements and program implementation steps to setup a comprehensive, effective and safe program.

For safe disposal of lead acid batteries and disposable electrodes, follow your national, state, and local regulations. In addition, to prevent risk of fire or explosion, never dispose of the battery in a fire.

Battery Life Expectancy

Lead acid battery packs require full recharging after use. Repeated short cycle recharging will result in reduced capacity and early battery pack failure.

Frequency of use, number of batteries used for operation, and the pattern of discharging and recharging batteries contribute to the loss of battery charge capacity. Because of this, ZOLL recommends that operators replace and discard used batteries on a preventive, scheduled basis. The most effective preventive replacement interval should be based on anticipated use patterns, battery pack testing results and experience with the device in actual operation.

ZOLL recommends battery replacement every eighteen months or sooner.

Low Battery Message

A 'LOW BATTERY' message will be displayed on the monitor once every minute, and a 2-beep low battery tone will sound (optionally) once every minute or once

This message and beeping will persist until just before device shutdown when the unit beeps twice and the REPLACE BATTERY message appears for approximately 20 seconds.

The time from display of the 'LOW BATTERY' message until the instrument shuts down will vary depending upon the battery age and condition.

every 5 minutes whenever the unit detects a LOW BATTERY condition. Replace the battery pack immediately to ensure continuous operation.

WARNING

- Test batteries regularly. Batteries that do not pass ZOLL's capacity test could unexpectedly shutdown without warning.

Replace the battery with a fully-charged battery immediately after the 'LOW BATTERY' or 'REPLACE BATTERY' message.

As individual battery capacity diminishes, the amount of operating time remaining after a 'LOW BATTERY' message also diminishes. For newer or lesser-used batteries, the operating time remaining after this warning will be significantly longer than the operating time remaining with batteries having seen more use. In either case, this warning will ultimately lead to defibrillator shut-off, and consequently, the low battery should be replaced with a fully-charged battery as soon as possible.

Changing the Battery Pack

The **M Series** products are designed for quick removal and replacement of the battery pack.

To remove the battery pack, turn the unit off. Insert a finger into the recess at the left end of the battery pack, press against the battery pack to disengage the battery pack locking clip and lift the battery pack out.

To install a battery pack, align the tab of the battery pack case with the battery pack removal finger recess on the

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top of the unit. Set the battery pack into the battery pack well. The shape of the battery pack will allow the battery

pack to seat itself. Turn the defibrillator back on to the selected mode of operation.

If the unit is set to PACE mode, pacing may resume

When operation of the unit is resumed subsequent to battery replacement, the unit's settings (for example, alarms, lead, pacing amplitude and rate) should be re-verified.

Charging and Testing Battery Packs

ZOLL batteries are designed to be charged in the device or other accessory chargers designed for use with ZOLL devices (XL battery packs also require **M Series** software version 30.0 or higher).

ZOLL recommends that you always have a ZOLL auxiliary battery charger available in order to charge spare batteries and perform periodic battery testing.

The ZOLL Base PowerCharger^{4x4} was designed specifically for this purpose. *

With the **M Series** unit plugged in and turned off, the device will recharge the PD4410 battery within 4 hours, and the XL battery pack in 7.2 hours. With the **M Series** unit plugged in and in use, the device will recharge a fully depleted PD4410 battery pack in 24 hours, and the XL battery pack in 32 hours.

Achieving Optimal Battery Pack Performance

The following general practices will ensure the longest life from your battery pack:

'Do's and Don'ts' in using battery packs:

- **DO charge battery packs completely.**

When a battery pack exchange is required, place a fully charged battery in the unit.

If use of a partially-charged battery pack is required, it may result in a very short Monitor/Defibrillator run time.

If a partially charged battery pack is used, a full charge is recommended before its next use. Repeated use after partial charging will quickly diminish the battery pack's capacity, thereby shortening its life.

Frequent use of partially charged batteries requires reassessment as to whether enough battery packs are in service.

- **DO change battery packs when 'LOW BATTERY' warning occurs.**

The Low Battery warning will ultimately lead to Monitor/Defibrillator shutdown. As batteries age, the run time between Low Battery warning and Monitor/Defibrillator shut down will progressively diminish. Older batteries may provide very little run time between Low Battery warning and Monitor/Defibrillator shut down. Therefore, when the Low Battery warning occurs, a fully charged battery pack should be installed as soon as possible.

immediately after battery replacement. If this is not desired, then turn the unit off for more than 10 seconds prior to replacing the battery.

Battery charging can be performed within the device or by using an external battery charger.

When the **M Series** products are plugged into AC mains, the **CHARGER ON** indicators will operate in the following manner:

The orange-yellow **CHARGER ON** indicator will illuminate continuously whenever; the device is turned OFF and charging the battery or turned ON with a battery installed.

The green **CHARGER ON** indicator will illuminate continuously whenever; the unit is turned OFF and the installed battery has been fully charged to present capacity.

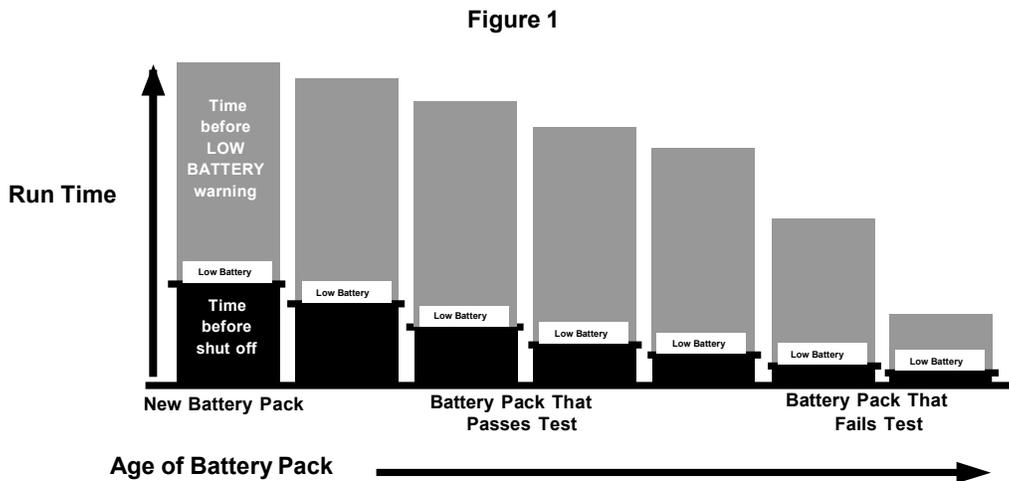
The green and orange-yellow **CHARGER ON** indicators will illuminate alternately, either when **no** battery is installed in the unit, **or** a battery charging fault has been detected.

When the device is not connected to AC mains, the **CHARGER ON** indicators will remain off.

* For XL Battery packs, the Base PowerCharger^{4x4} must be labeled XL Battery Ready.



Figure 1 illustrates the effect of lowered battery capacity on the Monitor/ Defibrillator operating time remaining after 'LOW BATTERY' warning.



- ***DO test battery packs regularly.***

Your organization must determine and implement an appropriate testing schedule. Adherence to this schedule is crucial to identifying battery packs that have reached end of life and should be removed from use. Battery packs subjected to repeated short discharge and charge cycles may lose their capacity quickly. Battery packs used this way should be tested more frequently.

- ***DO implement a means of indicating the charge status of battery packs.***

It is important to visibly distinguish battery packs that are charged from those that are not.

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Establish a system for visually indicating whether a battery pack is charged and ready for use or is in need of charging

ZOLL can provide you with battery pack Status Labels for this purpose, or you can use labels or methods of your own.

- **DO exchange your battery packs regularly.**
Battery packs should be exchanged once per shift or once per day depending on their use.
- **DO carry a fully charged spare battery pack at all times.**

Ø **DON'T remove a partially charged battery pack from the battery charger.**

If a partially charged battery pack is used, a full charge is recommended before its next use. Repeated use after partial charging will quickly diminish the battery's capacity, thereby shortening its life.

Ø **DON'T store battery packs in a discharged state.**

Battery pack capacity will diminish if left in a discharged state for extended periods.

Ø **DON'T assume that a shift check of the Monitor/Defibrillator verifies adequate battery pack run time.**

FOR Nickel Cadmium (NiCad) BATTERIES

Battery Maintenance Program

a. Battery (typically Nickel Cadmium (NiCad)) operated medical equipment may start malfunctioning at or around the 24-month point due to battery failure.

b. Defibrillators, patient monitors, and other lifesaving devices often contain NiCad batteries and must receive vigilant attention and a proactive approach to maintaining these critical NiCad powered devices.

c. To ensure that critical equipment items function when needed, the following battery maintenance procedures are to be followed for NiCad batteries:

(1) Completely discharge the batteries semiannually by draining the battery through equipment operation and then fully recharge. Replace the batteries every 18 months regardless of condition.

(2) Annotate when the next battery replacement date is on the actual battery with a permanent marker. If the battery is too small to write on annotate the replacement date on the DD Label 2163 (See Appendix 2163), Equipment Calibration/ Verification/Certification Label as follows:

(a) In block 5 'LEVEL', next to the service level 'I' or 'D' enter a '/BAT REPL MMY' ex. (I/BAT REPL 0103).

(b) Ensure that when the DD 2163 is replaced that battery replacement date gets undated on the new DD 2163.

Your Monitor/Defibrillator should be tested daily to verify the readiness of the device. This test, however, does not verify adequate charge state or capacity of the battery pack and may leave the

Monitor/Defibrillator with inadequate run time.

If the device shows a 'LOW BATTERY' warning during testing, the battery pack should be replaced and recharged.

- Ø **DON'T place battery packs charged with a Base PowerCharger^{4x4}, a PowerCharger or a PD 4420C (constant current chargers) into the PD 4420 or Single Battery Charger (constant voltage charger) without providing a rest period of at least 12 hours.**

This will result in damage to the battery packs.

- Ø **DON'T charge battery packs at temperature extremes.**

ZOLL recommends charging battery packs at or near normal room temperature (15°C to 35°C or 59°F to 95°F).

- Ø **DON'T leave batteries in a depleted state.**

Once a battery is removed from the device it should be immediately placed in a charge or test well. Idle batteries will lose some of their charge and may suffer damage to charge capacity if left in a discharged state.

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DA Form 5519-R (Tool Sign-Out Log/Register)

a. DA Form 5519-R provides a record and accountability for tools signed in or out of the medical maintenance shop tool room or cage.

b. The Tool Room/Cage Custodian will ensure that DA Form 5519-R is utilized and filled out as indicated below.

(1) Date. Enter the date beginning with the first of the month through the end of the month.

(2) Nomenclature. Enter the equipment or tool name (model number if applicable)

(3) Stock Number. Enter the National Stock Number (NSN), serial number, and/or identifiable marking.

(4) Date/Time. Enter the date and time the equipment was checked in or out as seen above.

(5) Issued To. Self explanatory.

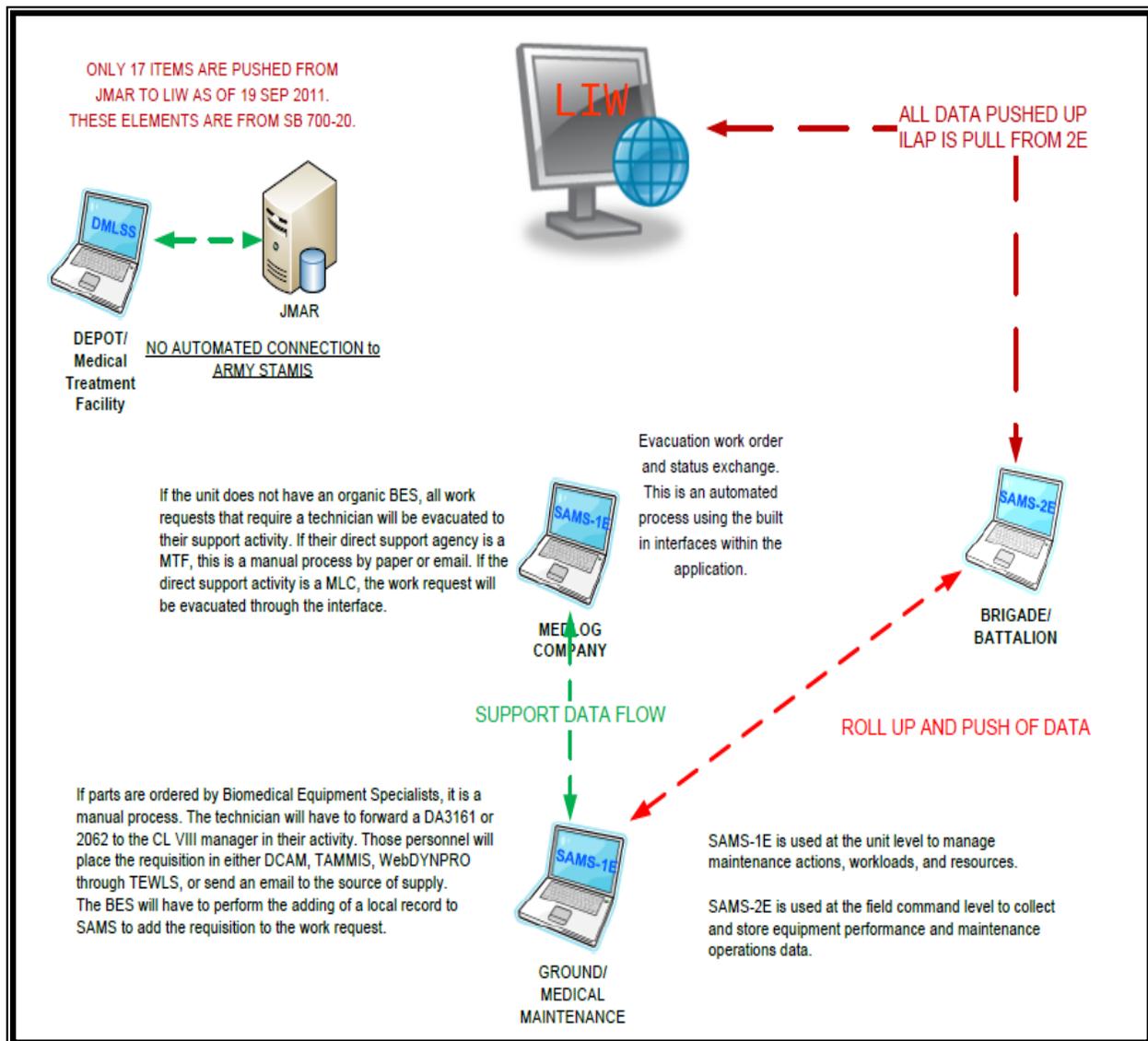
(6) Issued by Initials. The Authorized Tool Room Custodian/Assistant will enter their initials.

(7) Returned by Initials. Enter the initials of the person returning the equipment/tools.

(8) Checked in by Signature. The Authorized Tool Room Custodian/Assistant will sign indicating that the tools have been returned to the tool room/cage.



APPENDIX J
SAMS Simplified Illustrated Data Flow





APPENDIX K

SAMS-E Maintenance Management (AMEDD Specific)

1. GENERAL INTRODUCTION.

a. All SAMS-E maintenance-management tasks have accompanying tutorials. In the absence of formal SAMS-E training; or, to refresh practical knowledge, the SAMS-E User's Manual and step-by-step tutorials may be found under the Documentation/Tutorial tab. These references are useful for learning or reinforcing general SAMS-E methods. They additionally provide guidance on the principles of SAMS-E navigation practices. While these tutorials use motor-maintenance examples; medical-maintenance examples furnished within this SOP offer further explanation of AMEDD methodologies as they pertain to Work Order (WO) management.

b. Coordination and communication with the host server is key to successful SAMS-E implementation. Host-system operators perform a number of systems administration tasks that are essential in establishing and supporting SAMS-E maintenance-management practices, including:

- (1) Unit Creation
- (2) Equipment Authorization Management
- (3) DODDAC Management
- (4) Project Code Creation
- (5) APC Management (Finance)
- (6) Contact Management (Support/Customer Identification)
- (7) Work Center Management
- (8) Personnel Management
- (9) MMDF Loading
- (10) File Transfer Protocol (FTP)/Secure File Transfer Protocol (SFTP) Host Setup

c. In the event instructional tutorials and information contained in this SOP are insufficient, seek technical assistance from your local SAMS-E Clerk (MOS 92A), often assigned to the local Motor Pool, or contact the Sustainment Automation Support Management Office (SASMO). For continuing SAMS-E utilization or connectivity issues, contact the 6th MLMC at: 6mlmcmcmaint@amedd.army.mil (Com 301-619-7777 DSN 343-7777) or USAMMA NMP at: usammanmp@amedd.army.mil (Com 301-619-4464).



2. DEFINING UNSCHEDULED WOs (Repairs).

a. Primary unscheduled services (corrective maintenance) include the repair of faults and deficiencies as determined by operator PMCS, analysis, and the issuance of Modification Work Orders (MWOs)/Medical Materiel Quality Control (MMQC) messages.

b. To maximize medical device availability, emphasis should be placed on device replacement as opposed to extending device unavailability through performance of extended maintenance repair actions. When practical, Maintenance Regeneration Enabler (MRE) Line Replaceable Units (LRUs), Operational Readiness Floats-Medical (ORF-M), Repair Cycle Floats-Medical (RCF-M), and Medical Standby Equipment Program (MEDSTEP) assets should be used.

(1) WARRANTY RE - Warranty repairs are maintenance actions normally performed by the device manufacturer during a specified contractual performance period.

(2) VERIFICATION INSP - Verification inspections are performed to ascertain the accuracy of a technical inspection when an unserviceable supply condition code of: H - Unserviceable (Condemned) or P - Unserviceable (Reclamation) exists.

(3) TI/TE - Technical Inspection/Technical Evaluation involves conducting an analysis in accordance with Original Equipment Manufacturer (OEM) standards to include specific performance tests effecting life cycle repair, replacement, condition coding, and budgetary requirement. Generally, TI/TE services are used for:

(a) Acceptance or pre-issue of equipment.

(b) Turn-in and condition coding of materiel for reporting excess (refer to Paragraph 3b).

(c) Determining negligent or malicious equipment use and Estimated Cost of Damage (ECOD).

(d) Technical inspection as a result of an adverse condition or sentinel event.

(4) FIELD CH ORD - Field Change Order (FCO) - Fielded-equipment maintenance issues or safety recalls enacted by the OEM to correct or improve device functionality.

(5) MODIFICATION WO - A Modification Work Order (MWO) is used to initiate unscheduled services (Corrective Maintenance [CM]) actions.

(6) MMQC - MMQC messages alert select personnel of medical device defects.

(7) RE-10-20 standards - These standards serve as a 'catch all' for repair WOs.



Note

MMQCs, FCOs, or MWOs are mandatory and used for maintenance issues, safety recalls, or new information identified by USAMMA and the device OEM. USAMMA will notify the Army Medical Department (AMEDD) with appropriate corrective actions. FCOs are developed to achieve one of the following objectives: safety, capability, technology change, software change, equipment deficiency, or logistical change, operational support requirements, etc.

3. DEFINING SCHEDULED SERVICES WOs.

a. Scheduled services take priority over all medical-maintenance actions except for emergency repairs including those affecting patient or staff safety. Services will be performed and scheduled to meet or exceed those standards specified in writing by the OEM, published US Army Technical Manuals (TMs), or documented in Maintenance Allocation Charts (MACs). All medical devices within the Maintenance Master Data File (MMDF) require scheduled services. Managers use a risk or condition based analysis to assign maintenance priority within the SAMS-E.

b. General types of scheduled services include:

(1) INSP - Inspection encompasses both electrical safety and performance inspection actions. Inspections ensure that impacted devices perform in accordance with OEM design specifications and as stated in published in USAMMA TMs or MACs.

(2) PM - Preventive Maintenance (PM) is the scheduled care, servicing, inspection, detection, and correction of minor faults before these faults develop to become unscheduled services (CM) actions.

(3) CL - Calibration (CL) is the comparison of a medical system or device of unverified accuracy to a medical system or device of known accuracy for the purpose of detecting and (if necessary) correcting required performance specification deviations.

(4) SPR - Scheduled Parts Replacement (SPR) is a scheduled maintenance event that may include replacement of expendable service items such as batteries, filters, rubber goods, desiccant, O-rings, etc.



4. ADDING EQUIPMENT RECORDS.

a. A tutorial on creating Adding Equipment Records can be found under the Documentation/Tutorial tabs. Enter Tutorials, then the Equipment tab; scroll to the Equipment management and select Add Vehicular Equipment.

b. This tutorial is a good reference on the process. For medical devices, however, follow the instructions specified below in Paragraph 5, entitled: Adding Equipment and Scheduling Services (Step-by-Step).

Note

Before adding an equipment record, the medical device should be on the MTOE and included on the SAMS-E equipment authorization table. Modification of the equipment authorization table is normally performed by the host system operator.

5. ADDING EQUIPMENT AND SCHEDULING SERVICES (Step-by-Step)

- a. **NAVIGATE** to Equipment tab
- b. **CLICK** Create action button
- c. **SELECT** Equipment Type (Most medical devices are End Items)
- d. **ENTER** or **SELECT** device NSN

Note

If the equipment item does not have an NSN or is not contained in the MMDF, arrange for a local SAMS-2E equipment load into the Localized MMDF. Once this has been performed, the SAMS-2E must send an Update MMDF interface to the Host SAMS-E system in order for the equipment record to be added.

- e. **CLICK** Green Check Mark
- f. **ENTER** Admin Number, Serial Number, Warranty Expiration Date, Manufactured Year, Official User Name, and ERC



Note

The Admin Number is used in a manner similar to the Defense Medical Logistics Standard Support (DMLSS) Equipment Control Number (ECN). The Official User Name entry field may be used to identify the equipment Point of Contact (POC). The Equipment Readiness Code (ERC) can be found on the MTOE document.

- g. **NAVIGATE** to Service Data tab
- h. **CLICK** Create action button
- i. **SELECT** appropriate Service Type (Interval)

Note

If Service Type (Interval) is not known, request assistance from the 6th or USAMMA. This step can also be performed to modify services of existing equipment records.

- j. **ENTER** Last Completion Date and Next Service Date Due
- k. **NAVIGATE** to Components Tab (if applicable)

Note

Most medical devices do not have components. If components are being added, however, the equipment record will display within the Equipment Management window once all components have been successfully added.

6. CREATING PREDEFINED TASKS (Unscheduled/Scheduled Services).

- a. Predefined tasks must be created for each of the unscheduled and scheduled services specified in paragraphs 2 and 3 before WOs can be accepted, generated, and managed.



b. A tutorial on creating predefined maintenance WO tasks can be found under the Documentation/Tutorial tabs. Enter Tutorials, then the 'Maint tab;' scroll to the Predefined Work Order and select Create a Predefined Task. For medical devices, follow the instructions specified below in Paragraph 6c, entitled: Predefined Tasks (Step-by-Step).

c. Predefined Tasks (Step-by-Step)

- (1) **ENTER** Maintenance Tab
- (2) **SELECT** Predefined Tasks
- (3) **CLICK** Create
- (4) **ENTER** Task Code

Note

The Task Code may be any 3-digit code value as determined by the predefined task creator.

- (5) **ENTER** Full Description
- (6) **ENTER** Abbreviated Desc

Note

The Abbreviated Description field entry will be the general tasks specified in Paragraph 2 entitled: Defining Unscheduled WO (Repairs) and Paragraph 3 entitled: Defining Scheduled Services (e.g., INSP, PM, CAL, RE-TI).

- (7) **ENTER** Standard/Projected MH

Note

Standard/Projected MH represents the estimated Man Hours (MH) necessary to perform the task.

- (8) **SELECT** NSN (if applicable)



Note

In accordance with a new tutorial medical-maintenance change, *Do Not* select an NSN or PNO/Part No when performing predefined task setup or if the task is for a general work-task type. This allows use of predefined tasks for all medical devices.

EXCEPTION: SPR-type tasks where selection of appropriate NSN and PNO is required.

(9) **SELECT** Failure Code

Note

For scheduled services type tasks select 998 'Required Maintenance Action.'

d. Once predefined tasks have been created they must be assigned to the work center or shop section in order to be available for WOs. Refer to the 'Personnel' tutorial and select Assign Task to Work Center/Shop Section.

7. RUN THE SERVICES SCHEDULE REPORT.

a. Before the end of a reporting period and the opening of a scheduled WO, run the Services Schedule Report (refer to the 'Reports Tutorial,' Services Schedule Report). Medical devices documented in the report will reference specified service intervals.

b. A tutorial for the Services Schedule Report task can be found under the Documentation/Tutorial tabs. Enter Tutorials, then the 'Reports tab;' select 'Services Schedule Report.' For medical devices, follow the instructions specified below in Paragraph 7c, entitled: Services Schedule Report (Step-by-Step).

c. Services Schedule Report (Step-by-Step)

- (1) **NAVIGATE** to Reports tab.
- (2) **SELECT** Equipment
- (3) **SELECT** Service Schedule



Note

Leave Admin Number and NIIN/Part No fields blank. This report will provide all maintenance services due (by model number and NIIN) for the selected time period. To read the report, use the 'Read Action Button' Report output is based on the established services dates that are found in the equipment record. Ensure medical devices are properly managed in accordance with applicable TM or OEM recommendations.

8. OPENING A SCHEDULED WO.

a. A tutorial on creating Scheduled WO tasks can be found under the Documentation/Tutorial tabs. Enter Tutorials, then the 'Maint tab;' scroll to the Other Types of Work Order and select Service WO Create. This tutorial shows predefined WOs being selected for the WO Description. If the SAMS-E has predefined medical-device WOs, follow steps outlined in the tutorial. If not, enter the appropriate service type (e.g., INSP, PM, CL, or SPR) in the WO Description field followed by its service-interval type (e.g., Semi, Annual, Quarterly, etc.). Examples of properly formatted WO Description-field entries include: INSP SEMI or CL ANNUAL.

b. The 'Maint' tutorial demonstrates selection of the scheduled service-task drop down field. This service task is expressly designed for updating the 'next due date' in the equipment record; it does not permit entry of man hours or parts accountability.

c. An additional work center task should be created with a predefined medical-maintenance task-type of 'Other.' Also, many data-set field entries demonstrated in the tutorial as being automatically populated require manual field entry. Refer to the 'Opening a WO with Non-Deadlining Fault' tutorial as well as information furnished in Paragraph 7 for additional instructions. When opened correctly, the WO will have two assigned tasks. The first task will be the scheduled service task followed by 'Other.' For medical devices, follow the instructions specified below in Paragraph 8d, entitled: Opening a Scheduled WO (Step-by-Step).

d. Opening a Scheduled WO (Step-by-Step)

- (1) **SELECT** WO Maintenance from Maintenance dropdown menu
- (2) **CLICK** Create action button

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- (3) **ENTER** WO Description

Note

Type the appropriate service e.g., INSP, PM, CL or SPR. If these services are setup as predefined WOs many of the following steps will be auto filled.

- (4) **SELECT** Work Center/Shop Section
(5) **SELECT** appropriate Level of Work

Note

Priority based on FAD (active duty is 02).

- (7) **ENTER** appropriate Failure Detected During code
(8) **ENTER** comments (if applicable)
(9) **CLICK** Equipment Tab
(10) **CLICK** Admin No ellipses
(11) **SELECT** appropriate Admin No
(12) **ENTER** appropriate Commodity Code
(13) **CLICK** Tasks Tab
(14) **CLICK** Create action button
(15) **SELECT** Task Type of scheduled service
(16) **SELECT** appropriate service task (e.g., Semiannual, Annual)

Note

The task selected only updates the next due date when it is completed. An additional task must be entered to account for MHs and the work performed.

- (17) **ENTER** appropriate failure code



(18) **CLICK** OK

Note

In order to account for MHs and work performed, add an additional task type of 'Other.'

(19) **SAVE** record

(20) **RETURN** to WO

(21) **UPDATE** history tab and work center history tab status code to 5

9. OPENING AN UNCHEDULED WO FOR EQUIPMENT WITH A NON-DEADLINING FAULT.

a. A tutorial on creating Scheduled WOs can be found under the Documentation/Tutorial tabs. Enter Tutorials, then the 'Maint tab;' scroll to Work Order Management and select Non-Deadlining Fault.

b. Medical-maintenance changes to the tutorial example: When entering the WO Description, all repair WOs will begin with 'RE' to signify a repair followed by an actual fault description. Use a WO field description of TI/TE when the fault is unknown; or, MMQC, FCO, or MWO when a repair is directed. Examples of this include: RE failure code 69, RE TI/TE, RE MMQC check batteries for leakage, or RE FCO safety recall. Also, 'Other' should be used when creating the work center task type. Fault identification should reference one of the predefined tasks. For medical devices, follow the instructions specified below in Paragraph 9c, entitled: Opening an Unscheduled WO for Equipment with Non-Deadlining Fault (Step-by-Step).

c. Opening an Unscheduled WO for Equipment with Non-Deadlining Fault (Step-by-Step)

(1) **SELECT** WO Maintenance from Maintenance dropdown menu

(2) **CLICK** Create action button

(3) **ENTER** WO Description

Note

Type the appropriate service e.g., INSP, PM, CL or SPR. If these services are setup as predefined WOs many of the following steps will be auto filled.

(4) **SELECT** Work Center/Shop Section

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- (5) **SELECT** appropriate Level of Work

Note

Priority based on FAD (active duty is 02).

- (7) **ENTER** appropriate Failure Detected During code
(8) **ENTER** comments (if applicable)
(9) **CLICK** Equipment Tab
(10) **CLICK** Admin No ellipses
(11) **SELECT** appropriate Admin No
(12) **ENTER** appropriate Commodity Code
(13) **CLICK** Tasks Tab
(14) **CLICK** Create action button
(15) **SELECT** Task Type of scheduled service
(16) **SELECT** appropriate service task (e.g., Semiannual, Annual)

Note

The task selected only updates the next due date when it is completed. An additional task must be entered to account for MHs and the work performed.

- (17) **ENTER** appropriate failure code
(18) **CLICK** OK

Note

In order to account for MHs and work performed, add an additional task type of 'Other.'

- (19) **SAVE** record
(20) **RETURN** to WO
(21) **UPDATE** history tab and work center history tab status code to 5



10. OPENING AN UNCHEDULED WO FOR EQUIPMENT WITH A DEADLINING FAULT (Repair WOs).

a. A tutorial on creating Scheduled WOs can be found under the Documentation/Tutorial tabs. Enter Tutorials, then the 'Maint tab;' scroll to Work Order Management and select Creating a Work Order for a Deadlining Fault.

b. Medical-maintenance changes to the tutorial example: When entering the fault description, all repair WOs will begin with 'RE' to signify a repair followed by actual fault description, use TI/TE for the WO Description when the fault is unknown or MMQC, FCO, or MWO when a repair is directed. Examples of this include: RE failure code 69, RE TI/TE, RE MMQC check batteries for leakage, or RE FCO safety recall. For medical devices, follow the instructions specified below in Paragraph 10c, entitled: Opening an Unscheduled WO for Equipment with Deadlining Fault (Step-by-Step).

c. Opening an Unscheduled WO for Equipment with Deadlining Fault (Step-by-Step)

- (1) **SELECT** Admin Number from Equipment dropdown menu
- (2) **SELECT** equipment by Admin Number
- (3) **OPEN** record
- (4) **NAVIGATE** to Fault Management tab
- (5) **CLICK** Create action button
- (6) **ENTER** fault symbol X
- (7) **ENTER** fault description
- (8) **SELECT** appropriate Fault Detected During code
- (9) **SELECT** appropriate Failure code
- (10) **SELECT** appropriate How Recognized code
- (11) **ENTER** U (unscheduled) maintenance type
- (12) **SELECT** OK
- (13) **SAVE** record

Note

A work order has been created and can be managed under the WO Maintenance Menu.



- (14) **RETURN** to WO
- (15) **UPDATE** history tab and work center history tab status with appropriate status code.

11. UPDATING AND CLOSING A WO.

a. A tutorial on updating and closing a WO can be found under the Documentation/Tutorial tabs. Enter Tutorials, then the 'Maint tab;' scroll to Work Order Management and select Update Work Center Status and Man Hours or select Close a WO. Follow the instructions specified below in Paragraph 11b, entitled: Updating and Closing a WO (Step-by-Step).

b. Updating and Closing a Work Order (Step-by-Step)

- (1) **SELECT** Update or Close a WO from Maintenance dropdown menu of the WO Maintenance tab
- (2) **DOUBLE CLICK** applicable WO
- (3) **CLICK** Tasks tab
- (4) **CLICK** task to be updated
- (5) **SELECT** Man Hour Accounting tab
- (6) **ENTER** projected MHs
- (7) **CLICK** Create action button
- (8) **CLICK** Employee ID Ellipses
- (9) **SELECT** employee
- (10) **ENTER** MHs
- (11) **ENTER** MHs in Regular Hours field
- (12) **CLICK** OK
- (13) **CLICK** Tasks tab
- (14) **CLICK** Task Complete action button
- (15) **ENTER** Complete action code (G or E)

Note

All tasks must be complete in order to close the WO.

- (16) **SAVE** record



- (17) **NAVIGATE** to Work Center tab
- (18) **DOUBLE CLICK** Work Center tab
- (19) **CLICK** Work Center History tab
- (20) **CLICK** Create action button
- (21) **ENTER** Status Code (e.g., S, R, U) to close WO
- (22) **ENTER** 1 next to Repaired
- (23) **SAVE** record
- (24) **NAVIGATE** to History tab
- (25) **CLICK** Create action button
- (26) **ENTER** Status Code (e.g., S, R, U) to close WO
- (27) **ENTER** 1 next to Repaired
- (28) **SAVE** record

Note

The Comments field may be used to record additional
WO comments.

12. EVACUATING A WO TO SUPPORT.

a. Refer to tutorials under the Documentation/Tutorial tabs. Enter Tutorials, then the 'Maint' tab; scroll down to Other Types of Work Order and select WO Evacuations. For medical devices, follow the instructions specified below in Paragraph 12b, entitled: Evacuating a WO to Support (Step-by-Step).

b. Evacuating a WO to Support (Step-by-Step)

- (1) **NAVIGATE** to History tab
- (2) **ENTER** Status Code O to evacuate WO
- (3) **SAVE** WO
- (4) **NAVIGATE** to main SAMS-E screen



(5) **CLICK** Interfaces tab to access Evacuated WO-Send to Higher (AHN4MD) Interface

Note

Depending on SAMS-E configuration, the following WO evacuation steps may need to be performed by the host system (Motor Pool).

- (6) **CHECK** The New Interface box
- (7) **SELECT** correct contact
- (8) **COMPLETE** process

Note

The system will automatically change the status code in the WO History tab to 'M' when a WO History interface from higher is received and processed.

13. SENDING ARMY MATERIEL STATUS SYSTEM (AMSS) READINESS REPORTS.

- a. AMSS equipment readiness reporting is administered within the SAMS-E and represents the unit's total maintenance report card. This automated report is prepared monthly; specific information on the date of report generation can be obtained directly from the Motor Pool.
- b. AMSS readiness-report accuracy depends largely on the WOs equipment condition code and associated equipment records which must be precisely maintained.
- c. AMSS data review/verification can be found within the 'Reports' tab, under Readiness Review. If a client/host server network configuration is properly established between vehicle maintenance and medical maintenance shops, the host (Motor Pool) will roll up all applicable reporting requirements.



Note

SAMS-E configurations that are not properly setup may produce AMSS readiness-report send errors. If SAMS-E configuration problems occur or readiness report send errors are generated, contact the 6th MLMC at: 6mlmcmcmaint@amedd.army.mil (Com 301-619-7777 DSN 343-7777) or USAMMA NMP at: usammanmp@amedd.army.mil (Com 301-619-4464).

14. COMPILED SAMS CODES FOR MEDICAL MAINTENANCE SHOPS AND PARTS ACCOUNTABILITY.

- a. Table J1, located on page J-17 documents specific alpha-numeric codes as they pertain to medical maintenance shops and parts accountability.
- b. Also furnished in Table J1 are applicable code-field references along with description of each specific code value.



TABLE K1 - Compiled SAMS Medical Maintenance Shop and Parts Accountability Codes

CODE	CODE FIELD	DESCRIPTION OF CODE
A	Work Center Status Code Work Order Status Code	Awaiting initial inspection
C	Work Center Status Code Work Order Status Code	Awaiting Shop
K	Work Center Status Code Work Order Status Code	Awaiting parts non-NMC
01-15	Maintenance Priority Code	Code entered on a maintenance request to indicate its priority based on Section 3-3, AR 750-1
U	Work Order Status Code	Picked up by customer. Must be closed first.
Z	Work Order Status Code	Work request closed without completion
A	Failure Detection Code	Scheduled Maintenance
A	Work Center Status Code Work Order Status Code	Awaiting initial inspection
5	Work Center Status Code Work Order Status Code	In shop for scheduled services
M	Type Maintenance Request	OMA repair by organic BES
3	Type Maintenance Request	Modification Urgent/Limited. This would be used for MMQCs due to safety recalls
D	Type Maintenance Request	Repairable exchange.
1	Work Order Status Code	Awaiting Deadlining NMCS parts
W	Work Order Status Code	Work request closed, uneconomically repairable, Supply Condition Code H

