

VOLUME IV**PART I****CHAPTER 11****MINIATURE/MICROMINIATURE ELECTRONIC REPAIR PROGRAM**REFERENCES.

- (a) NAVSUP 485 - Afloat Supply Procedures
- (b) NAVSEA ST820-AC-IDX-01K - Master Test Program Set Index (MTPSI)
- (c) NAVSEAINST 4790.17 - Fleet Test and Repair of Shipboard Electronic Equipment
- (d) NAVSEA SE004-AK-TRS-010/NAVAIR 4790-PLN-001 - Standard Maintenance Practices 2M Electronic Assembly Repair
- (e) OPNAVINST 4790.4 - Ships' Maintenance and Material Management (3-M) Manual
- (f) COMNAVAIRLANTINST 4790.42/COMNAVAIRPACINST 4790.54 - CV/CVN Intermediate Maintenance Activity (IMA) Module Test and Repair Facility (MTRF)
- (g) NAVSEA TE000-AA-PLN-010 - Certification Plan for 2M Program
- (h) MIL-HDBK-263 - Electrostatic Discharge Control Handbook for Protection of Electrical and Electronic Parts, Assemblies and Equipment
- (i) COMNAVAIRLANTINST 4790.34 - Electrostatic Discharge (ESD) Control Program
- (j) NAVSUP 484 - Supply Afloat Fleet and Field Packaging Procedures
- (k) OPNAVINST 5100.19 - Navy Occupational Safety and Health (NAVOSH) Program Manual for Forces Afloat
- (l) NAVPERS 18068 - Manual of Navy Enlisted Manpower and Personnel Classification and Occupational Standards
- (m) OPNAVINST 4700.7 - Maintenance Policy for Naval Ships
- (n) COMNAVSURFLANT/COMNAVSURFPACINST 4400.1 - Surface Force Supply Procedures
- (o) MIL-STD 1686 - Electrostatic Discharge Control Program for Protection of Electrical and Electronic Parts, Assemblies and Equipment
- (p) MIL-HDBK-773 - Electrostatic Discharge Protective Packaging
- (q) SPCCINST 4441.170 - COSAL Use and maintenance Manual
- (r) NAVAIR 01-1A-23 - Electronic Assembly Repair Standard Maintenance Practice
- (s) NAVAIR 17-1-124 - Microminiature Component Repair Set
- (t) NAVAIR 17-600-141-6-1 - Microminiature Repair Status Pre-operational Check List
- (u) NAVAIR 17-600-141-6-2 - Microminiature Repair Station
- (v) COMNAVAIRLANTINST 13650.1 - Individual Material Readiness List (IMRL) Program
- (w) COMSUBPACINST 4419.1 - Submarine Tender Supply Management Procedures for AN/BSY-1 Repairables
- (x) COMSUBLANTINST 4419.1 - Module Screening and Repair Activity (MSRA) Repairables Management Procedure

LISTING OF APPENDICES.

- A Emergency 2M Repair Process
- B Normal 2M Repair Process
- C MTRF 3-M Reporting (Aircraft Carriers Only)
- D Sample MTRF Amplifying Procedures Message

- E Sample CV/CVN MTRF Repair Request Message
- F Sample MTRF Quarterly Report Message (Aircraft Carriers Only)
- G MTRF Equipment Configuration

11.1 PURPOSE. To promulgate policy, guidelines and procedures for the management of the Miniature/Microminiature (2M) Electronic Repair Program.

11.1.1 Scope. This chapter applies to all activities engaged in the repair of electronic equipment, assemblies, subassemblies, and modules. This chapter does not apply to electronic equipment under the cognizance of NAVSEA 08 or the Strategic Systems Project Office.

11.1.2 Policy. All failed Circuit Card Assemblies (CCA)/Electronic Modules (EM) are candidates for 2M screening and repair using Automated Test Equipment (ATE), GPETE (including AN/USM-646(V) and the Huntron 2000), and test bed installations. CCAs/EMs may be certified RFI per reference (a). Test Program Sets (TPS) used in screening and repair of CCAs/EMs are listed in reference (b).

11.1.3 Background. The 2M Electronic Repair Program, established by reference (c), supports the test and repair of electronic equipment at the Fleet level. Reference (d) describes 2M capabilities which include the performance of high quality repairs on CCAs and EMs. This 2M repair capability includes training, tools, techniques, technical documentation and certification.

11.2 RESPONSIBILITIES.

11.2.1 Fleet Commander In Chief. FLTCINCs shall:

- a. Operationally administer the 2M Electronic Repair and the Module Test and Repair Programs.
- b. Inspect and certify 2M repair facilities and technicians in accordance with reference (c).
- c. Ensure all 2M maintenance actions are documented in accordance with reference (e).

11.2.2 Type Commander/Immediate Superior In Command. TYCOMs/ISICs shall:

- a. Coordinate and manage the 2M program.
- b. Monitor the effectiveness of the 2M program and provide recommendations concerning 2M equipment, tools, and training.
- c. Implement progressive repair procedures.
- d. Coordinate logistic support, outfitting requirements, and deployment priorities for 2M repair stations and associated test equipment.
- e. Monitor 2M certification status and direct corrective actions as required.
- f. Schedule 2M certifications in conjunction with the CSRR prior to deployment, or as required.
- g. (Aircraft Carriers only) Conduct Module Test and Repair Facility (MTRF) inspections in accordance with reference (f) during the CSRR, as required, or prior to deployment.

11.2.3 Commanding Officer/Officer In Charge. Commanding Officers/Officers In Charge shall:

- a. Establish a 2M program under the cognizance of the Electronics Material Officer (EMO) and the Combat Systems Officer. For FMAs, utilize the Electronics Repair Officer as the overall coordinator.
- b. Maintain certified 2M stations and technicians.
- c. Screen and repair all CCAs/EMs using the progressive repair process. Submit CCAs/EMs beyond Ship's Force repair capability to the FMA.
- d. (Aircraft Carriers only) Establish a MTRF with the EMO, Combat Systems Officer, or, for FMAs, the Electronics Repair Officer as the overall coordinator.
- e. (Aircraft Carriers only) Maintain an active MTRF. Use the Module Test and Repair (MTR) Tracking System to maintain the ship's MTR performance and production database. Ensure quarterly production/performance reports are submitted in accordance with reference (f).

11.2.4 Miniature/Microminiature Repair Program Coordinator/Module Test and Repair Facility Coordinator. The 2M/MTRF Coordinator shall:

- a. Coordinate and monitor the effectiveness of the 2M WC and the repair program.
- b. Provide adequate space with environmental controls to support the 2M WC using the guidance of references (d) and (g).
- c. Submit additional/new 2M and test equipment requirements to the TYCOM Representative, providing complete justification (e.g., workload, documented manhours, added capabilities with addition of new equipment).
- d. Ensure adequate numbers of 2M trained and technically qualified personnel support the WC.
- e. Ensure 2M personnel and station requirements are met per the criteria of Section 11.4 of this chapter.
- f. Ensure 2M WC personnel are formally trained in the operation and maintenance of all ATE and MTRF equipment.
- g. Maintain an up to date library inventory of Gold Disks for the AN/USM-646(V) and test documentation for other installed ATE, in accordance with TYCOM outfitting requirements. Develop and submit Silver Disks to Naval Undersea Warfare Center, Fleet Engineering Office for CCAs/EMs which are not supported by Gold Disks.
- h. Ensure all 2M repair actions are documented per reference (e).
- i. Ensure the Electrostatic Discharge (ESD) procedures of references (h) and (i) are implemented within the 2M WC to provide adequate protection for ESD sensitive CCAs/EMs.
- j. Coordinate with supply to ensure all CCAs/EMs meet the packaging requirements of per reference (j).

CINCLANTFLT/CINCPACFLTINST 4790.3

- k. Ensure all CCAs/EMs certified RFI are processed as discussed in Section 11.5 of this chapter.
- l. Maintain a complete inventory of 2M, ATE, AN/USM-646(V), materials and consumables.
- m. Ensure compliance with all applicable safety procedures in accordance with reference (k).
- n. Ensure that the MTR Tracking System is used to record all maintenance actions and produces required production reports.

11.2.5 Fleet Technical Support Center. The FTSC shall:

- a. Conduct 2M certifications on personnel and stations.
- b. Maintain certification of 2M inspectors.
- c. Report results of the inspections to all concerned.
- d. Issue operator proficiency cards to recertified 2M technicians.

11.3 AUTHORIZED MINIATURE/MICROMINIATURE OUTFITTING. Authorized 2M outfitting is identified in reference (c).

11.4 MINIATURE/MICROMINIATURE PERSONNEL AND STATION REQUIREMENTS. References (g) and (l) provide certification criteria for all 2M stations and technicians. Reference (g) contains information on 2M repair stations and the QA standards for workmanship.

11.5 PROGRESSIVE REPAIR PROCESS. The progressive repair process is the sequential attempt to test and repair CCAs/EMs. Reference (m) requires repairs at the lowest possible level. Reference (a) describes Repairables Management for Depot Level Repairables (DLR) and Field Level Repairables (FLR). 2M repair technicians will screen and attempt to repair all CCAs/EMs within their training and capability, regardless of cognizance or the Source Maintenance and Recoverability code.

11.5.1 Repair Process. The two principal categories of 2M repair are normal and emergency as defined in reference (m). Appendices A and B of this chapter define the emergency and normal processes respectively.

11.5.2 Ship's Force Process. An activity's repair capability and the type of 2M station may differ depending upon TYCOM outfitting. Such differences include the type of 2M station (MN or MC) and outfitting of test capability (AN/USM-646(V), Huntron 2000, GPETE, etc.). These factors plus 2M technicians' training/certification dictate Ship's Force ability to screen and repair CCAs/EMs. Regardless of these differences, an attempt should be made to repair all CCAs/EMs prior to their forwarding to the FMA.

- a. The 2M WC shall be designated as CE99 (OE15 for Aircraft Carriers). All 2M work will be documented using these WCs. Final action codes will use "7 series" in accordance with reference (e).
- b. Submit Beyond Capability Maintenance (BCM) to the FMA using an OPNAV 4790/2K or MJC OXCA-C028. The WC responsible for the system will forward the CCA/EM to the FMA if the CCA/EM repair is beyond the capability of the 2M WC.
- c. Supply Officers have different responsibilities for DLRs or FLRs, per references (a) and (n).

- (1) DLRs. Carcass tracking procedures are delineated in local command instructions and will identify supply/maintenance personnel responsibilities for tracking CCAs/EMs either at the Ship's Force 2M WC or the FMA WC. Supply Officers are authorized to delay stock issue, replenishment, and non-RFI turn-in for up to 72 hours pending testing and repair. Aircraft Carrier WC OE15 MTRF will use the Progressive Repair Program with the MTR Tracking System to support Supply/MTRF interaction.
- (2) FLRs. Disposal of FLRs can be accomplished by either Ship's Force or the FMA.

11.5.3 Fleet Maintenance Activity Process. FMAs have additional 2M repair and ATE capabilities exceeding the Ship's Force level. The FMA will conduct repairs to CCAs/EMs if it is within their capability.

- a. An OPNAV 4790/2K or MJC item will be submitted to the local RSG for brokering. The organizational WC/MTRF will advise the RSG if the CCA/EM is time sensitive (i.e., CASREP) to prioritize for immediate scheduling.
- b. CASREP driven OPNAV 4790/2Ks will be accepted by the FMA on the same day the job is submitted and worked to support a 24 hour turn-around.
- c. Non-CASREP driven OPNAV 4790/2Ks will be screened to support activities and worked to support a 72-hour time limit or deadline date.
- d. If the FMA is unable to repair the CCA/EM, it is condemned according to Repairables Management procedures in accordance with the requirements of reference (a).

11.5.4 Certification of Miniature/Microminiature Repaired Assets as Ready for Issue. Reference (a) describes the definition and certification criteria for RFI items. Repaired CCAs/EMs will meet the following basic RFI requirements:

- a. Packaging and preservation.
 - (1) Repaired items from the 2M WC/MTRF will be packaged to meet the minimum standards of reference (a).
 - (2) A repair unit identification label shall be affixed to the body of each repaired unit in accordance with reference (a). The label must specify the command/activity performing the repair, the date repaired and the name of the 2M technician.
- b. ESD protection. ESD sensitive CCAs/EMs will be handled, prepared, and packaged in accordance with references (h) and (o). Ensure all CCAs/EMs are packaged for shipment per reference (p).

11.5.5 Miniature/Microminiature Piece Part Kit. The Piece Part Kit (PPK) is supported by ship class/FMA with either an Allowance Equipage List (AEL) or APL. The PPK consists of a cabinet, or cabinets, of commonly used electronic parts such as resistors, diodes, capacitors, transistors, and integrated circuit chips. The PPK has been designated as an Operating Space Item and is located in the 2M WC/MTRF. 2M piece parts have been identified as maintenance critical, parts consumed during 2M repair must be reordered on a one-for-one basis as usage is reported and are eligible for demand base stocking by the supply department. Parts needed for 2M repairs but not listed in the AEL/APL should be reported with a COSAL Feedback Report in accordance with reference (q).

11.6 UNIQUE MINIATURE/MICROMINIATURE GUIDANCE (NAVAL AIR FORCE).

11.6.1 Aviation Intermediate Maintenance Department.

- a. Use reference (r) as the standard maintenance instruction when repairing aircraft or aircraft support equipment CCAs/EMs. Copies of references (r), (s), (t), and (u) shall be maintained in each 2M WC.
- b. Ensure all 2M Collateral Duty Inspectors demonstrate in-depth knowledge of 2M repairs. All micro repair should be inspected by Collateral Duty Inspectors familiar with micro repair standards.
- c. Initial support equipment outfitting for 2M stations is accomplished under the Individual Material Readiness List Program in accordance with reference (v).

11.6.2 Aircraft Carrier Fleet Maintenance Activity Module Test and Repair Facility.

- a. The mission of the MTRF WC OE15 shall be to enhance the parent Aircraft Carrier and Battle Group units' Combat Systems readiness through onboard I-level electronics repair of CCAs/EMs.
- b. MTRF evaluations will be conducted by the Naval Underwater Warfare Center, Fleet Engineering Office during the CSRR or prior to deployment in accordance with reference (f).
- c. Ensure all MTRF WC repair actions are documented under the 3-M system per reference (e) and the procedures delineated in Appendix C of this chapter, using a pre-formatted OPNAV 4790/2K. Maintain a file copy of the OPNAV 4790/2K with the completed QA Form 17 for a period of 12 months or until the next CSRR or QA audit, whichever is the longer period.
- d. Ensure the ESD control procedures of references (h), (i), and (j) are instituted at the MTRF WC and all departments (less Aviation Intermediate Maintenance Department (AIMD)) to provide for the adequate protection of ESD sensitive CCAs/EMs.
- e. Ensure that the MTR Tracking System is used to record all repairs, maintain the production database and to produce required reports.
- f. Aircraft Carrier Combat Systems Material Officers will promulgate amplifying procedures by message for Battle Group units to request MTRF WC assistance. A sample format is provided in Appendix D of this chapter.
- g. Units requesting CV/CVN MTRF repairs submit "IMMEDIATE" message in the format of Appendix E of this chapter. MTRFs will not accept CCAs/EMs for repair without prior notification.
- h. Each MTRF shall provide COMNAVAILANT/COMNAVIRPAC a quarterly summary report of MTRF accomplishments, by message or Naval Telegram, due by the 15th day of the month following the end of each quarter. A sample format is provided in Appendix F of this chapter.
- i. Employ the Progressive Repair Program to establish and support the interface between the Supply Department and Combat Systems MTRF in repair of all ship systems CCAs/EMs.

11.7 UNIQUE MINIATURE/MICROMINIATURE GUIDANCE (SUBMARINE FORCE).

11.7.1 Module Screening and Repair Activity. The Module Screening and Repair Activity (MSRA) has been developed to support the AN/BSY-1(V), AN/BQQ-15D/E, and CCS MK1/2 programs (WC 84). Parts supported by the MSRA Module Support List are managed in accordance with references (w) and (x), as appropriate.

- a. MSRAs are located at the Naval Submarine Support Facility New London, CT, Submarine Base Pearl Harbor, HI, and Engineering Development Model, Norfolk, VA.
- b. The MSRA suite of test equipment includes a Teradyne tester for digital CCAs/EMs, an LTX for analog CCAs/EMs, a UTS-625 for power supplies, an Amplifier Test Set for Modular Power Amplifiers, and the Display Assembly Test for displays.
- c. (Submarine Base & Naval Submarine Support Facility only) FMAs shall establish and maintain an MTRF consisting of the combined capabilities of WCs 67L, 67M, and 84A.

11.7.2 Fleet Maintenance Activity/Submarine Base.

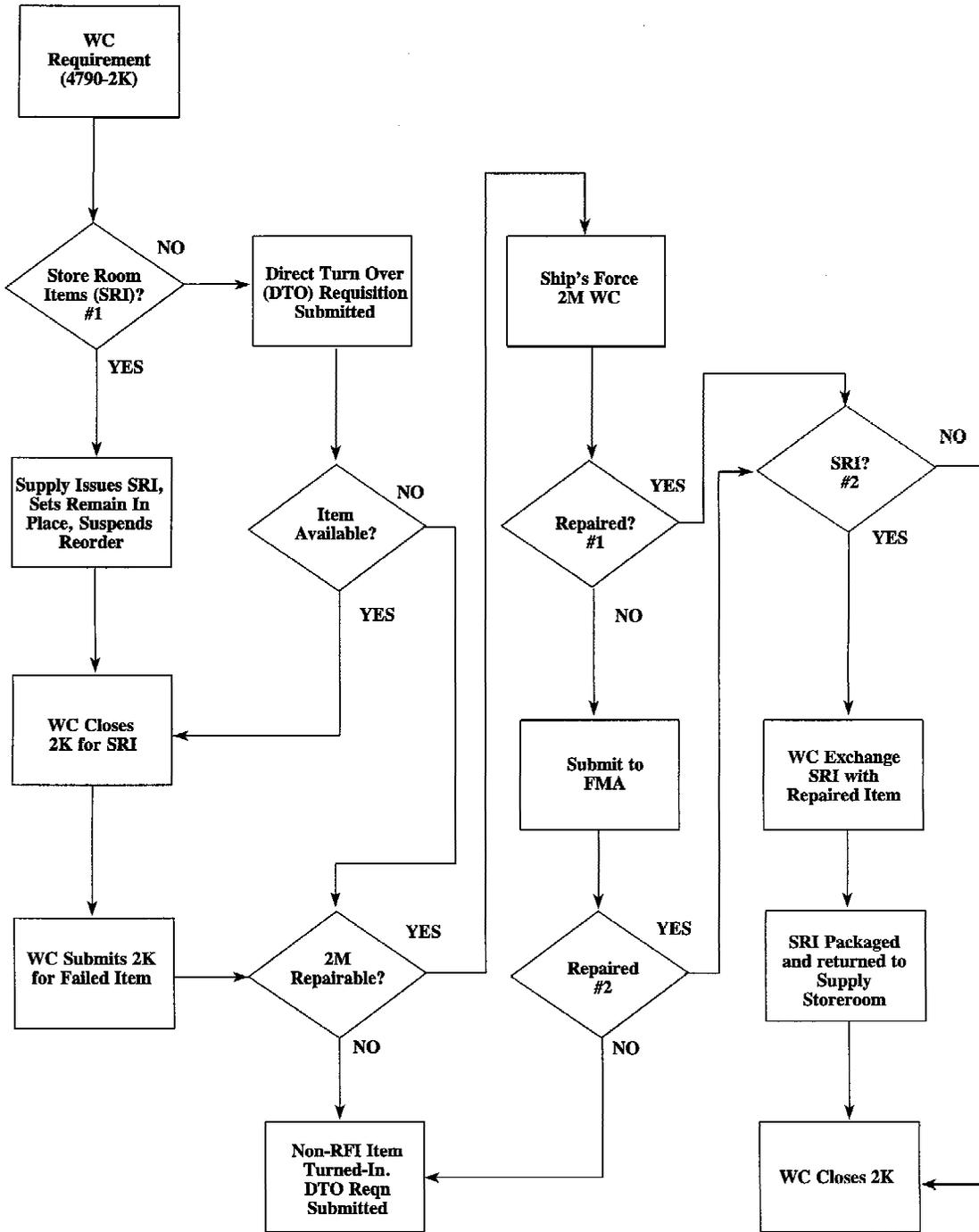
- a. Designate the R-4 Division Officer through the Production Officer to be the overall coordinator for the MTRF.
- b. FMAs are to maintain 2M/ATE/GPETE repair capability. The minimum acceptable capability is two 2M repair stations, one of which will be microminiature capable.
- c. Promulgate amplifying procedures for out-of-area or inter-service customers to request MTRF assistance using the guidance of Appendix D of this chapter.
- d. Maintain a complete inventory of MTRF using Appendix G of this chapter.

11.7.3 Reports. FMAs shall utilize the Mandatory Turn-in Repairable Tracking System to generate a quarterly Mandatory Turn-in Repairable Summary Package, with option (1) of the MTRF accomplishments, forwarded to the TYCOM (N42). This summary package is due by the 15th day of the month following the end of each quarter.

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APPENDIX A

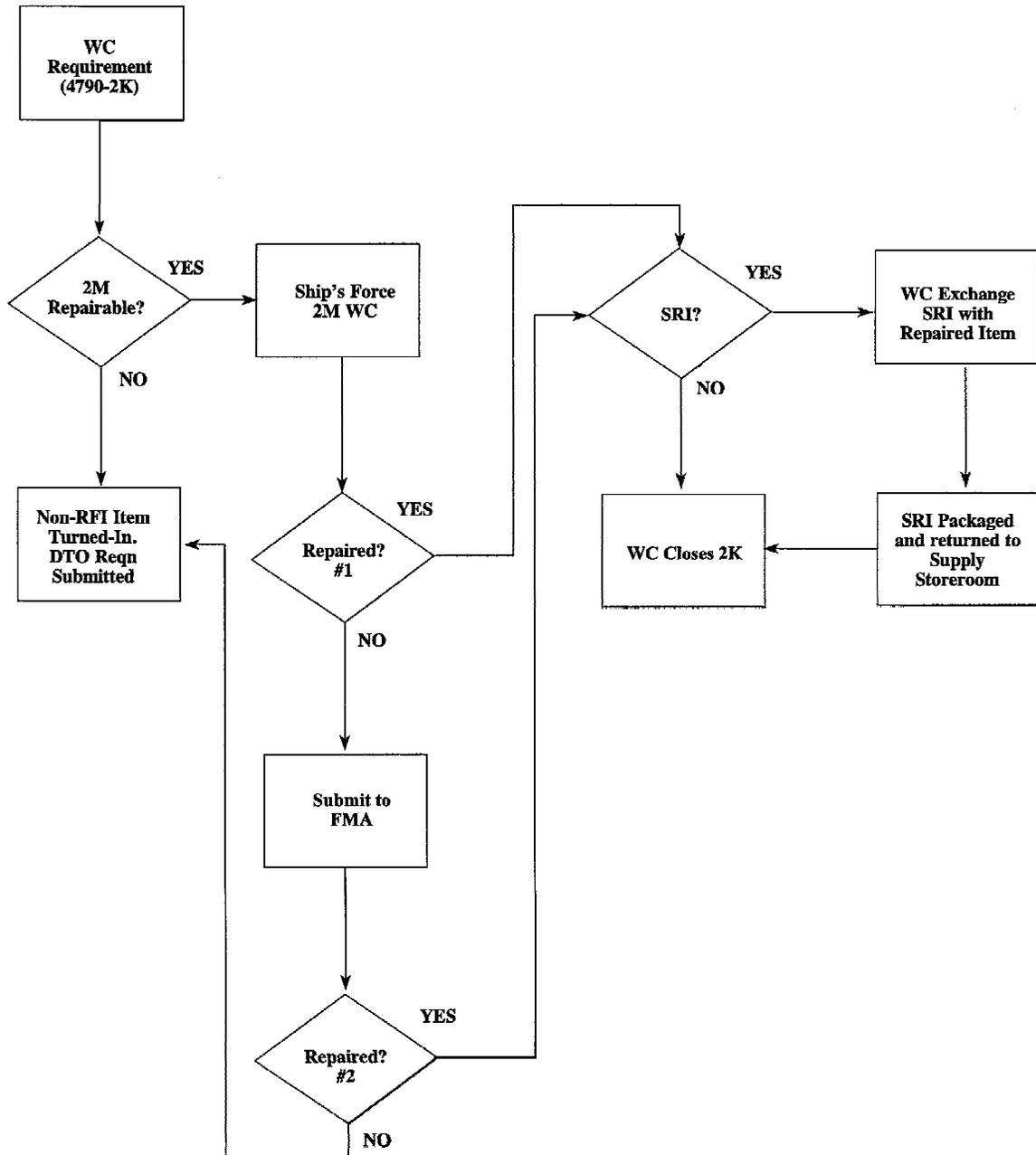
EMERGENCY 2M REPAIR PROCESS



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APPENDIX B

NORMAL 2M REPAIR PROCESS



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APPENDIX C**MTRF 3-M REPORTING
(Aircraft Carriers Only)**

1. All diagnostic screening and troubleshooting on non-aviation CCAs/EMs or components utilizing the MTRF suite of testers or other GPETE/Special Purpose Electronic Test Equipment (SPETE) in non-aviation WCs shall be documented via the 3-M system using a pre-formatted OPNAV 4790/2K as either a deferred action or a completed action. OE15 will be the Repair WC (block 49) or Originating WC (block 02) depending upon how the job was inducted into the MTRF. This includes CCAs/EMs that are screened "No Fault Evident" (NFE). OE15 will be the Repair WC unless repairing its own equipment; then they would be the LWC. The pre-formatted OPNAV 4790/2K shall be closed out in the Fleet Maintenance Activity Maintenance Management System and copies retained in OE15 WC files (regardless of Originating WC) for one year. Deferred action OPNAV 4790/2Ks received from tended ships (with failed CCA or EM) will be entered into the Fleet Maintenance Activity Maintenance Management System by OE15 as written, followed by initiation of an OPNAV 4790/2K worksheet to be processed as previously described. Aviation CCAs/EMs should be forwarded to the Aircraft Carrier AIMD with accompanying Visual Information Display System/Maintenance Action Form (OPNAV Form 4790/60).
2. Sections I, II and III of the OPNAV 4790/2K shall be completed per reference (e).
3. Section IV, block 35 of the OPNAV 4790/2K is pre-formatted in fields. The following guidance shall be used when completing these fields:

a.	<u>FIELD IDENTIFIER</u>	<u>DESIRED ENTRY</u>
	PN	Enter CCA/EM Part Number
	NSN	Enter CCA/EM NSN
	RSN	Enter CCA/EM Reference Symbol Number
	COST	Enter CCA/EM Cost rounded to nearest dollar; enter no cost if DLR
	DE	Enter diagnostic equipment utilized to fault isolate CCA/EM (i.e., AN/USM-465, Huntron 2000, Huntron 5100DS, Fluke 77AN)
	TPS	Enter TPS number if TPS is available; enter "NA" if TPS is not available
	GD	Enter Gold Disk number if Gold Disk is available; enter "NA" if Gold Disk is not available
	NFE	Enter "Y" if NFE; "N" otherwise
	QA	Enter "QA" level

<u>FIELD IDENTIFIER</u>	<u>DESIRED ENTRY</u>
CA	Enter "Y" if CASREP averted; "N" otherwise (see Note)
CC	Enter "Y" if CASREP corrected; "N" otherwise
TST	Enter troubleshooting time in hours and tenths of hours (i.e., 0.3, 1.6)
2MT	Enter 2M repair time in hours and tenths of hours (i.e., 0.3, 1.6)
AWPT	Enter delay of CCA/EM repair, in days, due to awaiting parts status

b.

<u>COMPONENTS REPLACED</u>	<u>DESIRED ENTRY</u>
RSN	Enter reference symbol number of component replaced
NSN/PN	Enter NSN or component replaced; if no NSN, enter part number
COST	Enter cost of component replaced
AEL	Enter "Y" if component replaced is included in piece parts AEL; "N" otherwise
COMMENTS	Comment on effectiveness of TPS and Gold Disk if applicable; if "Y" entered in CC field, include CASREP number and the Date Time Group of the message

- NOTE: A CASREP HAS BEEN AVERTED WHEN A CCA/EM HAS BEEN:**
- A. REPAIRED OR FOUND NFE.**
 - B. REPLACEMENT CCA/EM IS NOT CARRIED IN ONBOARD STOCK.**
 - C. INSTALLED IN ANY COMBAT, ENGINEERING, AVIATION OR NON-TACTICAL SYSTEM RESTORING THE SYSTEM TO OPERATION.**

APPENDIX D

SAMPLE MTRF AMPLIFYING PROCEDURES MESSAGE

FM USS (SHIP'S NAME AND HULL NO.)//
TO BATTLE GROUP//
INFO TYCOM//(AS APPROPRIATE)
CTF//(AS APPROPRIATE)
CTG//(AS APPROPRIATE)
BT
UNCLAS //N04790//
MSGID/GENADMIN/USS (SHIP'S NAME AND HULL NO.) EMO//
SUBJ/MTRF ADVISORY//
REF/A/DOC/NWP 10-1-10//
REF/B/DOC/NAVSUP P-485//
REF/C/DOC/CNALINST 4790.42/CNAPINST 4790.54//(AS APPROPRIATE)
NARR/REF A SPECIFIES REPORTING PROCEDURES TO BE USED WHEN REPORTING SIGNIFICANT
EQUIPMENT CASUALTIES. REF B DETAILS MATERIAL REQUISITION AND HANDLING
PROCEDURES. REF C PROVIDES INST FOR OBTAINING MTRF ASSIST//
POC/(NAME)/(RANK/RATE)/(LOCATION)/(DSN/COMM TELEPHONE NO.)//
RMKS/1. MTRF CONTINUES TO BE FULLY OPERATIONAL ONBOARD USS (SHIP'S NAME AND HULL
NO.). MTRF ENHANCES BATTLE GROUPS COMBAT SYSTEM READINESS THROUGH ONBOARD
FMA ELECTRONICS REPAIR. USS (SHIP'S NAME AND HULL NO.) HAS THE CAPABILITY TO FAULT
ISOLATE AND REPAIR MAJORITY OF SUSPECT FAILED CCA/EM FOR THE BATTLE GROUP. MTRF
ASSETS INCLUDE: (TAILOR LIST TO MTRF CONFIGURATION)
A. HUNTRON TRACKER MODELS 2000 AND AN/USM-646 (5100DS)
B. AN/USM-465 ATE
C. 2M ELECTRONICS REPAIR
D. 2M PIECE PARTS ELECTRONICS SUPPORT
E. TRIPLE CROWN 700 MICRO-COMPUTER BASED DRAM AND EPROM IC TEST SETS
F. SENCORE LC-77 CAPACITANCE/INDUCTANCE TESTER
2. BRIEF DESCRIPTION OF (CARRIER/FMA) REPAIR CAPABILITIES (TAILOR LIST TO MTRF CONFIGURATION)
A. AN/USM-646 (5100DS) INTERFACES WITH A DEDICATED DESKTOP PC TO ASCERTAIN
AND STORE CHARACTERISTICS OF KNOWN GOOD CCAS/EMS ON MAGNETIC DISK OR CD-ROM
FOR FUTURE USE AS A COMPARISON STANDARD FOR SUSPECT CCAS/EMS
B. USS (SHIP'S NAME AND HULL NO.) HOLDS MOST CURRENT AN/USM-646 TPS. MAINTENANCE
SUPPORT GUIDES ARE AVAILABLE TO FULLY SUPPORT TEST AND PIECE PART REPAIR FOR THE
BATTLE GROUP
C. LIMITED CRYPTO REPAIR
D. XEROX COPIER REPAIRS FOR MODELS 2830/1048/1090 AND SAVIN MODEL 7020S
E. FULL MICRO COMPUTER TEST AND REPAIR FOR DESKTOP PC PRINTERS AND
ASSOCIATED PERIPHERALS JOTS POST TIMS AND VARIOUS OTHER RAPID PROTOTYPE PC
BASED SYSTEMS
3. AN/USM-646 (5100DS) GOLD DISK LIBRARY OF LEARNED CCAS/EMS IS AVAILABLE TO
ENHANCE BATTLE GROUP COMBAT SYSTEMS AND OTHER ELECTRONIC SYSTEMS SELF-
SUFFICIENCY

4. MTRF WILL ATTEMPT TO REPAIR ANY AND ALL CCAS/EMS WITH FOLLOWING EXCEPTIONS
 - A. CCA/EM UNIDENTIFIABLE DUE TO:
 - (1) LACK OF TECHNICAL DOCUMENTATION
 - (2) LACK OF COMPONENT OR CIRCUIT IDENTIFICATION
 - (3) UNAVAILABILITY OF KNOWN GOOD CCA/EM
 - B. CCA/EM GREATER THAN FIFTY PERCENT DESTROYED
 - C. COMPLEX RADIO FREQUENCY CCAS/EMS
 - D. EPROM CCA/EM WITHOUT DOCUMENTATION OR DUPLICATE CCA/EM
 - E. UNIQUE EXPERIMENTAL CIRCUITRY
 5. MTRF IS GUIDED BY THE FOLLOWING RULES:
 - A. UPON RECEIPT OF NON-RFI CCA/EM MTRF WILL EVALUATE PROGNOSIS FOR COMPLETING REPAIRS AND PROVIDE ECD TO ALCON BY IMMEDIATE MSG WITHIN 48 HOURS. MTRF CANNOT ACCEPT CCAS/EMS OR OTHER MATERIALS REQUIRING REPAIR WITHOUT PRIOR MTRF NOTIFICATION AND DIRECTIONS PROVIDED FOR SHIPMENT BY MATCONOFF
 - B. REPAIRED ITEMS WILL BE TAGGED RFI AND RETURNED TO THE REQUESTING UNIT
 - C. CASREPS WILL BE SUBMITTED IAW REF A CONCURRENT WITH MTRF REPAIR REQUEST. CASREP WILL IDENTIFY MTRF REQUIREMENTS IN THE ASSIST AND AMPN BLOCKS WHEN APPLICABLE. WHEN MTRF REPAIR IS SUCCESSFUL CASREP REQUISITION WILL BE CANX IAW REF B AND CASCOR SUBMITTED IAW REF A. IF MTRF IS UNSUCCESSFUL NON-RFI ASSET WILL BE RETURNED TO REQUESTING UNIT
 - D. ITEMS SUBMITTED TO MTRF WILL NOT BE HELD IN AWAITING PARTS STATUS. IF PARTS ARE UNAVAILABLE FROM MTRF PRE-EX BINS CV SUPPLY OR MATCONOFF SCREEN NON-RFI ASSET WILL BE RETURNED TO ORIG AS NOT REPAIRABLE BY MTRF
 6. UNITS REQUESTING MTRF ASSIST SEND IMMEDIATE MSG IAW ENCL 7 OF REF C
 7. ADDITIONAL INFORMATION
 - A. PACKAGE AND MARK ALL ELECTROSTATIC DEVICES PROPERLY FOR SHIPMENT
 - B. INCLUDE COPY OF MTRF REPAIR REQUEST MSG WITH 4790/2K AND ORIG DD 1348-1 IN SHIPPING CONTAINER. SHIP TO USS (SHIP'S NAME AND HULL NO.) MARKED ATTN EMO FOR MTRF REPAIR. USS (SHIP'S NAME AND HULL NO.) WILL PROVIDE RED STRIPE MTRF REPAIR STICKERS TO ALCON VIA SEPCOR
 - C. ALL NON-RFI AND RFI ASSETS WILL BE COORDINATED BY MATCONOFF//
- BT

NOTE: ENSURE MESSAGES ARE IN ACCORDANCE WITH NTP-3 FORMAT AND CURRENT PLAD IS UTILIZED.

APPENDIX E

SAMPLE CV/CVN MTRF REPAIR REQUEST MESSAGE

FM USS (SHIP'S NAME AND HULL NO.)/(TENDEDED SHIP)
TO USS (SHIP'S NAME AND HULL NO.)//
INFO CTF//(AS APPROPRIATE)
CTG//(AS APPROPRIATE)
MATCONOFF//
BT
UNCLAS //N04790//
MSGID/GENADMIN/USS (SHIP'S NAME AND HULL NO.)/(TENDEDED SHIP)
SUBJ/MTRF REPAIR REQUEST//
REF/A/DOC/CNALINST 4790.42/CNAPINST 4790.54//(AS APPROPRIATE)
AMPN/REF A SPECIFIES PROCEDURES FOR REQUESTING CV/CVN MTRF ASSIST//
RMKS/1. IAW REF A, REQ MTRF ASSIST AS FOLLOWS:
A. PRIME EQUIPMENT/(AN/SPS-49, MK-86, AN/UYQ-21(V) ETC.)
B. CIRCUIT SYMBOL AND PN OF CCA/EM/ITEM TO BE TESTED
C. NSN OF CCA/EM/ITEM TO BE TESTED
D. DOCUMENT NUMBER/JSN/APL
E. PRIORITY
PRI ONE - CASREP/(ITEM REQUIRED TO CORRECT CASUALTY (A, C-4 B, C-3 C, C-2 D, ANORS))
PRI TWO - SYSTEM/EQUIPMENT IS OPERABLE FROM ONBOARD OR BATTLE GROUP
STOCK. FWD NON-RFI CCA/EM TO MTRF FOR REPAIR
PRI THREE - REPAIR TO SPARE CCA/EM
F. BRIEF DESCRIPTION OF EQUIPMENT FAILURE
G. AVAILABLE TECH DOCUMENTATION
H. DISPOSITION OF NON-RFI IF NOT REPAIRABLE//
BT

NOTE: ENSURE MESSAGES ARE IN ACCORDANCE WITH NTP-3 FORMAT AND CURRENT PLAD IS UTILIZED.

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APPENDIX F

**SAMPLE MTRF QUARTERLY REPORT MESSAGE
(Aircraft Carriers Only)**

FM USS (SHIP'S NAME AND HULL NO.)//
 TO TYCOM//(COMNAVAILANT OR COMNAVIRPAC AS APPROPRIATE)
 INFO CNO WASHINGTON DC//N86B/N87/N88/N61/N62/N63/94//
 CINCLANTFLT NORFOLK VA//N435//
 CINCPACFLT PEARL HARBOR HI//N4315//
 COMNAVSEASYSKOM WASHINGTON DC//06Q//06QM/04DS/56Y/PMS312/PMS331/
 PMS400/PMS411/PMS412//
 NUWC DET NORFOLK VA//2431/24311//
 NAVSURFWPCEN CRANE IN//PM6/607/6073//
 COMSPAWARSYSKOM WASHINGTON DC//003A/003-22/003-222D/PD-50/PD-
 60/PMW151/PMW152/PMW156/PMW162//
 COMNAVSUPSYSKOM WASHINGTON DC//031/03113/03114//
 BT
 UNCLAS //N04790//
 SUBJ/CV/CVN MTRF (OE15) WORK CENTER QUARTERLY SUMMARY REPORT//
 MSGID/GENADMIN/USS (SHIP'S NAME AND HULL NO.)//
 REF/A/DOC/CNALINST 4790.42/CNAPINST 4790.54//(AS APPROPRIATE)
 AMPN/REF A CONTAINS REQ FOR MTRF QUARTERLY REPORT//
 RMKS/1. IAW REF A FOL DATA PROVIDED FOR 01JAN - 31MAR/

	CV EQUIP	BG EQUIP
A. MTRF REPAIRS REQUESTED	(QTY)	(QTY)
B. MTRF REPAIRS INDUCTED	(QTY)	(QTY)
C. MTRF REPAIRS COMPLETED	(QTY)	(QTY)
D. CASREPS AVERTED/CORRECTED	(QTY)	(QTY)
E. CCAS/EMS TESTED WITH NO FAULT EVIDENT	(QTY)	(QTY)
F. OE15 WORK CENTER REPAIRS DOCUMENTED	(QTY)	
VIA 3-M SYSTEM		
G. TOTAL ESTIMATED MONETARY SAVINGS	(AMOUNT)	
H. SURFACE MOUNT TECHNOLOGY STATION		
UTILIZATION		(QTY)
I. PRIMARY DIAGNOSTIC EQUIPMENT USED FOR REPAIR		
(1) AN/USM-465		(QTY)
(2) AN/USM-646 (5100DS)		(QTY)
(3) HUNTRON TRACKER 2000/1000		(QTY)
(4) OTHER (SPECIFY EQUIPMENT)		(QTY)
J. RETURNED TO SUPPLY RFI		
(PART NO.) (NSN) (EQUIP/SYSTEM)		
K. CV/CVN DEPARTMENT/DIVISION/WORKCENTER/SUPPORT DEPT		
(DEPT) (DIV) (WC/SD) (EQUIP/SYSTEM)		
L. RECOMMENDATIONS/COMMENTS//		

BT

NOTE: ENSURE MESSAGES ARE IN ACCORDANCE WITH NTP-3 FORMAT AND CURRENT PLAD IS UTILIZED.

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APPENDIX G

MTRF EQUIPMENT CONFIGURATION

1. The following list comprises the minimum MTRF WC equipment and accessory configuration.

a. Digital and Analog Testing Capability:

GPETE.

Huntron Tracker AN/USM-646 (5100DS)
Huntron Tracker 2000
Huntron Switcher 410
Huntron Shortracker Model 90

b. Personal Computer:

386 microprocessor with math co-processor
4MB RAM
3.5 or 5.25 inch floppy disk drive
80MB hard drive
CD-ROM
VGA monitor
Mouse
2 serial ports
1 parallel port

c. 2M Repair Station.

d. Modular Transfer Kits.

e. ESD Protection (Mat, Support Accessories).

f. Piece Parts Support:

AEL configured to site requirements.
VIDMAR parts cabinet.

g. Gold Disks for Huntron 5100DS.

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