R-400-299-M

UNITED STATES COAST GUARD

SURFACE FORCES LOGISTICS CENTER

BALTIMORE, MD

SPECIFICATION FOR THE REPAIR OF ELECTRONIC EQUIPMENT AND MODULES

October 2014

SFLC NUMBER R-400-299-M

REPAIR OF ELECTRONIC EQUIPMENT AND MODULES

1 **SCOPE**

1.1 General. This specification covers the requirements for the repair of electronic equipment and those aspects of the maintenance processes, which are applicable to electronic equipment. It establishes uniform standards and procedures to be used in the repair process, for example, receipt and evaluation, maintenance procedures, selection and use of parts and material, marking, preservation, and packing for shipment.

1.2 Types of equipment/components. The repairs of the following types of equipment/components are included in this specification:

Complete assemblies
Equipment subassemblies
Circuit card assemblies
Power supplies
Modules
Other components as specified in the solicitation

2. **APPLICABLE DOCUMENTS**

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

2.2 Government documents.

2.2.1 Specifications and standards. The following specifications and standards form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DoDISS) cited in the solicitation.

STANDARDS

MILITARY

MIL-STD-129P Change 4, Sept 2007 Marking for Shipment and Storage

MIL-STD-2073-1E Change 17, January 2011, Standard Practice for Military Packaging

SFLC SP-PPM-001 Revision June 2011, Preservation, Packaging and Marking

NON-GOVERNMENT STANDARDS

ASTM-D3951-10 Packing, Commercial

(Unless otherwise indicated, copies of the above specifications and standards are available from the Defense Printing Service Detachment Office, Bldg. 4D (NPM-DODSSP), 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

2.3 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents that are DOD adopted are those listed in the issue of the DoDISS cited in the solicitation. Unless otherwise specified, the issues of the documents not listed in the DoDISS are the issues of the documents cited in the solicitation.

AMERICAN SOCIETY FOR QUALITY CONTROL

ANSI/ASQC-C1-1996 Specification of General Requirements
For a Quality Program

(Application for copies should be addressed to the American Society for Quality Control (ASQC), 611 East Wisconsin Avenue, Milwaukee, Wisconsin 53202.)

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

3. **REQUIREMENTS**

3.1 General Requirements

3.1.1 Repair. The contractor shall perform the level of repair required to return the repairable equipment or module to a ready for issue (RFI) condition from a non-ready for issue (NRFI) condition.

3.1.2 Repair. Electronic equipment shall be processed for the return of unserviceable items to an operational status. This process shall accomplish:

a. Disassembly and cleaning required to facilitate the equipment repairs.
b. Repair or replacement of parts that have failed or are of marginal quality due to wear, deterioration, or damage so as to return the item to ready for issue (RFI) condition.

c. Install all applicable field changes, modifications and firmware upgrades.
d. Re-assembly, alignment, and testing.

3.1.3 Government furnished equipment. Defective equipment, modules, or items will be

shipped to the Contractor from the Coast Guard Surface Forces Logistics Center or as specified in the procurement documentation.

3.1.4 Defective item lot size. Equipment or items will be shipped as single items or in lots. Lot size will be based on Coast Guard needs.

3.1.5 Obsolete parts/processes. In the event certain parts or processes become obsolete, the Contractor shall notify the Contracting Officer and submit 1) rationale and verification of any obsolete part or process, and 2) a written estimate of the cost required to make the repair. The Contractor shall not proceed until firm fixed price and delivery schedules are negotiated and authorization to proceed is received from the Contracting Officer.

3.1.6 Unusually damaged items. Repair requirements do not include equipment or components received which indicate obvious misuse, cannibalization, and severe damage due to mishandling, fire, or submersion. In the event that severely damaged or cannibalized equipment or components are received, the Contractor shall notify the Contracting Officer and submit 1) a description of the condition of the equipment or component as received, 2) an estimate of the probable cause of the condition, and 3) a written estimate of the cost required to make the repair. The Contractor shall not proceed until a firm, fixed price for repair and a delivery schedule are negotiated and authorization to either proceed with repairs, or disposal instructions have been received from the Contracting Officer.

3.1.7 Limitation of repair. The price in the schedule is the cost of repair unless otherwise authorized under 3.1.6. Repairs will not normally be authorized if the cost of repair exceeds 65% of the acquisition cost of the item. In the event that the repair costs will exceed 65% of the item acquisition cost, the Contractor shall notify the Contracting Officer. The Contracting Officer will make the determination whether to repair the item or will provide disposal instructions.

3.2 Detailed requirements.

3.2.1 Materials. The Contractor shall provide all spare parts, current technical manuals, discrete components and consumable materials needed for the repair of the items.

3.2.1.1 Selection of Parts and materials. The Contractor shall utilize parts and materials specified in the latest design specifications. Original equipment manufacturer's (OEM) parts or parts that equal or exceed the performance and tolerance characteristics of the OEM parts must be used on all component part replacements. Any part which would change the form, fit, and/or function of the equipment or module shall not be used. Requests to utilize nonstandard (non-OEM or direct equivalent) parts shall be submitted to the Contracting Officer for approval.

3.2.2 Repair process.

3.2.2.1 Inspection. In the course of repair, three levels of inspection shall be performed, as follows:

a. Incoming inspection. This inspection shall be performed at the point of receipt of the repair material to detect damage in transit. The items shall be inspected for completeness, for model type per contract or work order, and for obvious flaws and defects. If the equipment or module is received incomplete or damaged in transit, the Contracting Officer shall be immediately notified of the discrepancy. The Contractor shall identify and record the damaged property by its nomenclature; serial number (if applicable), NSN, manufacturer's part number, date of receipt, quantity, number inspected, number defective or damaged, contract number, nature of the defect, circumstances of discovery, and estimated repair cost.

b. In-process inspections. These inspections shall be performed during repair in order to ensure completeness of repair and conformance to equipment technical requirements. Examples of such inspections are 1) adherence to fault isolation and test procedures, 2) proper application of coatings and treatments, and 3) proper mounting and connection of piece parts. **The results of all in process inspections shall be recorded and submitted to the Contract Officer, see attachments for examples of the required information.**

c. Final inspection. This inspection shall consist of 1) a visual inspection of workmanship, assembly and fit, mechanical and electrical safety and marking, materials, parts, and finish, and, treatment for prevention of corrosion and 2) verification of all operations specified in the equipment technical requirements. All final inspection observations and measurements shall be recorded and certified.

3.2.2.2 Disassembly. The degree of disassembly on any equipment or module processed by the Contractor shall be commensurate with the level of repair required.

3.2.2.3 Cleaning. Items requiring cleaning during repair shall be cleaned prior to or during the pre-induction inspection and disassembly, whichever is deemed more practical by the Contractor. Final cleaning shall be conducted to ensure the component is free of obvious defects and corrosion, soil, grease, residue, fingerprints, perspiration, or other acid or alkali residues. **All temporary markings and tags, to include the CG-5236 Serviceable/Unserviceable Tag shall be removed.**

3.2.2.4 Testing. In the course of repair, the Contractor will perform two types of testing:

a. Operational tests. These tests shall be for the purpose of verifying operation and to identify areas requiring fault isolation.

b. Final performance and acceptance testing. A dynamic test will be conducted to confirm acceptability of alignment and function. This must be accomplished using a fully operational equipment mock-up, or the use of Automated Test Equipment (ATE) with the ability to emulate live circuit conditions. The qualifying performance standard for the equipment shall be the test criteria contained in the equipment technical requirements.

3.2.2.5 Fault isolation. Troubleshooting of electronic equipment and modules shall recognize the fault symptom, identify the circuit responsible, and isolate the defective component(s) or sub assembly. After a fault has been localized, but prior to corrective action, ascertain that the

specific fault is actually the cause of the malfunction rather than a symptom of some other malfunction. The Contractor shall be responsive to the troubleshooting procedures as indicated in the applicable technical documentation or established test procedures.

3.2.2.6 Parts replacement. Selection of parts for replacement shall be as specified in 3.2.1.1. The criteria for parts replacement shall be in accordance with 3.1.2.b.

3.2.2.7 Marking - Contractor identification. **The Contractor shall affix a permanent vendor identification decal that is traceable by the Coast Guard to the Contractor, date of repair and the contract under which the repair was accomplished.**

3.2.3 Technical specifications. Except where otherwise indicated, the Coast Guard will not provide the current technical specifications, manuals, or other technical data or diagnostics for repair of the items covered by this specification. The Contractor is responsible for obtaining the required technical manuals or data. This information shall remain the property of the Contractor but must be available for inspection by the Coast Guard.

3.2.3.1 Repair diagnostics. The Contractor shall develop repair diagnostics and test procedures to effectively troubleshoot problems with the components and repair the components to meet the requirements of this specification. The diagnostics and test procedures shall be in accordance with current technical specifications (see paragraph 3.2.3).

3.2.4 Test and diagnostic equipment. The Contractor shall provide all test and diagnostic equipment required to repair and test the items during the repair process.

3.2.5 Documentation. All rework performed and parts replaced on each item shall be documented. The record sheet shall contain all operations, including; inspection, initial testing, probable cause of failure, repair, alignment, cleaning, final testing, and inspection that have been performed.

3.2.5.1 Test data record sheet. A record of the data obtained during tests performed (see 3.2.2.4) shall be made on a test data record sheet. The Contractor is responsible for preparing and maintaining the documents. **A copy of the applicable test data record shall be included with each item.**

4. **VERIFICATION**

4.1 General. The Contractor shall maintain an inspection system in accordance with ANSI/ASQC-C1, which shall insure each item that is offered to the procuring activity for acceptance or approval conforms to contract requirements. The inspection system shall be documented and available for review and approval by the procuring activity.

4.2 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the Contractor is responsible for the performance of all inspection requirements as

specified herein. Except as otherwise specified, the Contractor may use his own or any commercial facilities acceptable to the Government.

4.2.1 Records. The Contractor shall maintain records of all inspections and tests. These records shall available for viewing upon request.

4.3 Calibration. Test equipment utilized during repair shall be calibrated in accordance with ANSI/ASQC-C1-1996 using standards traceable to the National Bureau of Standards.

4.4 Submission of test plans. If the equipment is being repaired by other than an OEM authorized / certified repair facility Test Plans shall be submitted for review by the Equipment Specialist(s) prior to the award via the Contracting Officer.

5. **PREPARATION FOR DELIVERY**

5.1 Unit pack. All items repaired shall be individually packaged and returned in the same container that it was received in prior to induction. **Remove any old markings and if applicable the CUA stickers from the containers prior to applying the new markings.**
A copy of the test data record sheet (see 3.2.5.1) shall be included in the container. In the event of loss or damage to the original container, the Contractor must provide an equal replacement container.

5.2 Electronic parts susceptible to damage by environmental field forces. Sensitive electronic devices and other items susceptible to environmental field force damage (electrostatic fields, electromagnetic fields, or magnetic fields, or combinations of these fields) shall be protected in accordance with MIL-STD-2073-1E with Change 17, January 2011.

5.3 Intermediate and exterior packing. Unit packs shall be packed in exterior shipping containers, meet common carrier acceptance and provide safe delivery to destination.

5.4 Marking. In addition to any special markings required by the contract or order, all interior packages and shipping containers shall be marked in accordance with MIL-STD-129 CHANGE 4. Bar coding is required.

Effort made to determine the item was operational. Include any programming, alignment, set-up or material changes: ____

Inspection Report (OIR) **Date**

From: (POC: name and phone number)

Contract Number: ____

Repair:
Line Item: ____ NIIN/NSN: ____ P/N: ____ Revision: ____ S/N: ____
Problem(s) found: ____

Recommended solution: List Material/Parts____

Anticipated Material Cost: ____

Anticipated Labor Hrs: ____ Total Anticipated Repair Cost: ____
Cost includes Open/Inspect fee? YES NO

Or

BER:
Line Item: ____ NIIN/NSN: ____ P/N: ____ Revision: ____ S/N: ____
Problem(s) found: ____

Recommended solution: List Material/Parts____

Anticipated Material Cost: ____

Anticipated Labor Hrs: ____ Total Anticipated Repair Cost: ____
Cost includes Open/Inspect fee? YES NO
Obsolete Material/Parts: ____

Or

No Fault Found:
Line Item: ____ NIIN/NSN: ____ P/N: ____ Revision: ____ S/N: ____

Inspection Report (OIR)

Date: _____ From: (POC: name and phone number)
_____
_____
_____

REPAIR:
Contract Number: HSCG40-_____
Line Item: _____ S/N:
NIIN/NSN: _____
P/N: _____ Revision: _____
Problem(s) found: _____
_____
Recommended solution (List Material/Parts): _____
_____
Anticipated Material Cost: _____Anticipated Labor Hrs: _____
Total Anticipated Repair Cost: _____ Cost includes Open/Inspect fee? YES NO

OR

BEYOND ECONOMICAL REPAIR (BER):
Contract Number: HSCG40-_____
Line Item: _____ S/N:
NIIN/NSN: _____
P/N: _____ Revision: _____
Problem(s) found: _____
_____
Recommended solution (List Material/Parts/Replacement): _____
_____
Obsolete Material/Parts: _____
Labor Hrs: _____ Cost (if any): _____ Cost includes Open/Inspect fee? YES NO

OR

NO FAULT FOUND:
Contract Number: HSCG40-_____
Line Item: _____ S/N:
NIIN/NSN: _____
P/N: _____ Revision: _____
Effort made to determine the item was operational (Include any programming, alignment, set-up or material changes):
_____
_____
Labor Hours: _____ Cost (if any):_____ Cost includes Open/Inspect fee? YES NO