INCH-POUND

NOTICE OF CHANGE

MIL-STD-981B
NOTICE 2
10 February 1994

DESIGN, MANUFACTURING AND QUALITY STANDARDS FOR CUSTOM ELECTROMAGNETIC DEVICES FOR SPACE APPLICATIONS

TO ALL HOLDERS OF MIL-STD-981B, NOTICE 1

1. THE FOLLOWING PAGES OF MIL-STD-981B HAVE BEEN REVISED AND SUPERSEDE THE PAGES LISTED:

NEW PAGE	DATE	SUPERSEDED PAGE	DATE
19	10 February 1994	19	31 January 1992
20	31 January 1992	20	Reprinted without change

2. RETAIN THIS NOTICE AND INSERT BEFORE TABLE OF CONTENTS.

3. Holders of MIL-STD 981B will verify that page changes and additions indicated above have been entered. This notice page will be retained as a check sheet. This issuance, together with appended pages, is a separate publication. Each notice is to be retained by stocking points until the military standard is completely revised or canceled.

NOTE: The margin of this notice is marked with an asterisk to indicate where change (additions, modifications, corrections, deletions) from the previous revision is made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations in relationship to the last previous revision.

Custodians:
NASA - NA
Air Force - 19

Review activities:
DLA - ES

Preparing activity:
NASA-NA

Agent:
DLA - ES

Project 5950-0857

AMSC N/A FSC 5950

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

5.5.13.4 Preparation of cups or molds. Cups or molds shall be prepared for potting or impregnation as follows:

* a. Clean plastic or metal cups with solvents that will not contribute to the degradation of the part; such as commercial grades of isopropyl alcohol, acetone, stoddard solvent, or equivalent. Plastic cups shall be sandblasted or otherwise etched on the inside surface to assure good adhesion of the resin compound to the cups.

NOTE: Cleaned inner surfaces shall not be touched with bare hands or fingers and cups or molds shall be stored in such a manner as to preclude atmospheric contamination.

b. Wipe molds with the same solvents, or equivalent, for removal of visible dust, dirt, and other undesirable matter.

c. Final rinse cups and molds with the same solvent used in b. above.

5.5.13.5 Impregnating and potting compounds. All impregnating and potting compounds must be degassed. Pot life of materials shall be controlled and shall be in accordance with manufacturer's recommendations. In addition, all potting materials shall be dated for expiration of shelf life, and shall not be used after this date.

5.5.13.6 Equipment. Vacuum chambers and other equipment shall have adequate automatic controls and shall be capable of maintaining the required pressure and temperature for the time period specified by the applicable specification or source control drawing or by the product bulletin of the compound manufacturer. The inside of the chamber, chamber lid seal, resin containers and device holding fixtures shall be maintained free of dirt and other foreign materials that may inhibit proper operation of the equipment.

5.5.13.7 Voids. Units shall be potted or encapsulated in such a manner as to prevent voids, bubbles, and cracks.

5.5.13.7.1 Internal voids. There shall be no internal voids greater than 0.015 inch in the largest dimension located within 0.005 inch of any conductor, solder joint, or terminal. The total volume all voids, and the volume of any one void shall not exceed 10 and 5 percent respectively of the total volume of encapsulant within the device, and shall in no way jeopardize the mechanical or functional integrity of the device.

5.5.13.7.2 Surface voids and depressions. Surface voids and depressions shall not reduce the thickness of the covering over internal parts to less than what is shown in Figure 8.

5.5.13.7.3 Extraneous material. Care shall be taken to ensure that extraneous material is not introduced during the potting process.

5.6 Quality assurance provisions. Quality assurance provisions shall be in accordance with the following paragraphs. Test and inspection methods and criteria shall be in accordance with MIL-T-27, MIL-C-15305, MIL-T-21038, MIL-T-55631 or MIL-C-83446 as applicable, unless otherwise specified.

5.6.1 Product assurance program. A product assurance program shall be established by the contractor to meet the requirements of appendix A. The contractor shall obtain procuring activity approval of the

product assurance program in accordance with appendix A. Approval shall include a product and quality audit by the procuring activity or their designated representative. This audit will cover verification of the implementation of the product assurance program, conformance of design standard and manufacturing techniques of the requirements of this document and test and inspection capabilities.

5.6.1.1 Documentation. Documents shall be maintained, in accordance with appendix A, which specify materials, calibration techniques, processing, test and measurements controls and procedures. These documents shall cover all process steps to be controlled. The documentation shall be available to the operating personnel at all times. It shall be made available to the procuring agency for the purpose of verifying its existence, coverage, implementation and adequacy.

5.6.1.1.1 Lot control.

5.6.1.1.1.1 Class B. A lot control shall be used for each lot. The lot control shall include as a minimum: lot identification, operation, quantity, date of operation, and operator identification.

5.6.1.1.1.2 Class S. Lot control for class S devices shall be required for each part design. As a minimum requirement, the lot control shall constrain the inspection lot to consist of a single part number representing one design and processed as a single lot through all manufacturing steps on the same equipment to the same product assurance program and procurement document and identified with the same date and lot code designation. In addition, the lot shall conform to the following:

a. Each element, such as cores, magnet wire, finished cases, wire lugs and terminals, potting or molding compound used in the manufacture of the part shall be from a single lot and traceable to the lot.

b. Solder for each application shall be of a uniform composition and traceable to the source.

c. In general, all single process operations shall not be changed during processing of the lot.

d. A lot identifying number shall be assigned at the time the lot is assembled. This unique lot identifying number shall be maintained through acceptance and shall be traceable to the production lot and to the lot date code.

e. The manufacturer shall maintain traceability and test records for a minimum of 10 years on each lot date code. The manufacturer shall record when in-process controls and quality conformance inspections start and when they have been completed.

f. All requirements specified in 5.6.1.1.1.1.

5.6.1.1.2 Process control charts. Process control charts shall be maintained during manufacture. The charts shall contain information such as: process step, lot number and/or date, action limits and absolute limits, and range. Where absolute limits are exceeded, the manufacturer shall document the corrective action taken.

5.6.2 Incoming inspection. Methods and procedures which are used to control inspection, storage, and handling of incoming materials shall be documented. Records shall be provided which verify that materials used in production meet the requirements of the manufacturer's specifications and of the general and detail specifications. As a minimum the following items shall be covered.

5.6.2.1 Magnet wire. Magnet wire used in the design and construction of parts specified in accordance with this standard shall meet the following requirements: