



Technical Standard Order

Subject: TSO-C109, AIRBORNE NAVIGATION DATA STORAGE SYSTEM

a. Applicability.

(1) Minimum Performance Standard. This Technical Standard Order (TSO) prescribes the minimum performance standard that airborne navigation data storage systems must meet in order to be identified with the applicable TSO marking. Models of airborne navigation data storage systems that are manufactured on or after the date of this TSO must meet the applicable standard set forth in Global Systems, Inc., document "Minimum Performance Standard (MPS) for the Airborne Navigation Data Storage/Systems," dated March 31, 1983.

(2) Environmental Standard. Global Systems, Inc., document "Minimum Performance Standards (MPS) for the Airborne Navigation Data Storage Systems," incorporates as a reference Radio Technical Commission for Aeronautics (RTCA) Document No. DO-160B, "Environmental Conditions and Test Procedures for Airborne Equipment," dated July 1984.

b. Marking.

(1) In addition to the marking specified in Federal Aviation Regulations (FAR) § 21.607(d), the environmental categories in which it has been qualified to operate in accordance with RTCA document DO-160B shall be legibly and permanently marked on the major equipment component.

(2) Each separate component of equipment that is manufactured under this TSO (computer, controller, etc.) must be permanently and legibly marked with at least the name of the manufacturer, the TSO number, digital computer software version (if applicable), TSO output class, and the environmental categories in which it has been tested.

(3) With regard to 21.607(d)(2), the part number is to include hardware and software. Either approach must include a means for showing modification status.

NOTE: If unit is too small to include such marking, the requirements of FAR § 21.607(d), may be met by placing the information on an attached tag.

c. Data Requirements.

(1) In addition to FAR § 21.605, the manufacturer must furnish the manager, Aircraft Certification Office (ACO), Federal Aviation Administration (FAA), having purview of the manufacturer's facilities, one copy each of the following technical data:

- (i) Operating instructions.
- (ii) Equipment limitations.
- (iii) Installation procedures and limitations.
- (iv) Schematic drawings as applicable to the installation procedures.
- (v) Wiring diagrams as applicable to the installation procedures.
- (vii) List of the major components (by part number) that make up the equipment system complying with the standards prescribed in this TSO.
- (viii) Manufacturer's TSO qualification test report.
- (ix) Nameplate drawing.

(2) In addition to those data requirements that are to be furnished directly to the FAA, each manufacturer must have available for review by the manager, ACO having purview of the manufacturer's facilities the following technical data:

- (i) A drawing list, enumerating all the drawings and processes that are necessary to define the article design.
- (ii) The functional test specification to be used to test each production article to ensure compliance with this TSO.
- (iii) Equipment calibration procedures.
- (iv) Corrective maintenance procedures (within 12 month after TSO authorization).
- (v) Schematic drawings.

d. Data to be furnished with manufactured units. One copy of the data and information specified in paragraphs (c)(1)(i) through (vii) of this TSO and instructions for periodic maintenance and calibration which are necessary for continued airworthiness must go to each person receiving for use one or more articles manufactured under this TSO.

e. Availability of Reference Documents.

(1) Copies of RTCA Document No. DO-160B may be purchased from the Radio Technical Commission for Aeronautics Secretariat, One McPherson Square, Suite 500, 1425 "K" Street, NW, Washington, DC 20005.

(2) Copies of Global Systems, Inc. document "Minimum Performance Standards (MPS) for the Airborne Navigation Data Storage System," dated March 31, 1983 may be purchased from Global Systems, Inc., 2144 Michelson Drive, Irvine, California 92715, ATTN: Production Manager, Navigation Data, Telephone: (714) 851-0119. Cost for single copy is \$10.00 to cover postage and handling. Global Systems, Inc., permits the document to be reproduced and used without further authorization.

(3) Federal Aviation Regulations, Part 21, Subpart O and Advisory Circular 20-110B, "Index of Aviation Technical Standard Orders," may be reviewed at the FAA Headquarters in the Office of Airworthiness, Aircraft Engineering Division (AWS-110), and at all regional ACO's.

/S/ William J. Sullivan
Acting Director of Airworthiness