

ORDER

8110.29A

4/11/79

Initiated

by: AFS-120

SUBJECT: CARGO COMPARTMENT REQUIREMENTS FOR AIR SHIPMENT OF  
LIVESTOCK - CARs 4b.260, 4b.382 and 4b.383; FARs  
25.561, 25.787, 25.855 and 25.857

1. PURPOSE. This order outlines FAA criteria applicable to the carriage of livestock in all certificated airplanes engaged in cargo operations and describes special provisions necessary in connection with such shipments.
2. DISTRIBUTION. This order is distributed to the branch levels in all Flight Standards offices in Washington, regions, and Aeronautical Center; to all General Aviation, Air Carrier, Engineering and Manufacturing, and Flight Standards District Offices; and to all International, International Aviation, and Aeronautical Quality Assurance Field Offices.
3. CANCELLATION. Order 8110.29 dated July 25, 1977, is cancelled.
4. BACKGROUND.
  - a. In general, CAR 4b and FAR 25 do not contain specific rules for the carriage of livestock. However, the rules pertinent to design of cargo compartments apply for all types of cargo, including livestock.
  - b. Due to the uniqueness of transporting such cargo, an early need for guidance was foreseen; and FAA Order 8000.20, regarding same, was issued October 19, 1970. This order contained the guidelines for early design and was inadvertently cancelled April 30, 1975. Since that time, questions have been raised by some regions regarding such previously defined factors as vertical restraint and cargo compartment flammability. Therefore, further explanatory information is necessary.
  - c. Previous approvals not commensurate with this order will not be accepted as precedent. Therefore, the procedures in paragraph 4 below apply to any airplane that is altered to provide for hauling livestock, such as cattle and horses, regardless of its certification basis.
5. PROCEDURE.
  - a. The cargo compartments should meet the airworthiness criteria of CAR 4b.359 or FAR 25.787, including means to prevent contents (livestock) from shifting under specified flight and ground load conditions. The compartments should meet the

criteria of CAR 4b.382, or FAR 25.855, and should be classified as Class "B" or "E" in accordance with CAR 4b.383 and FAR 25.857.

b. Where vertical restraint is not provided in the livestock loading installation, it will be necessary to determine that its lack would not cause hazards to the airplane, its structure, or equipment, during negative "g" conditions expected under normal operations. Maneuvering loads less than 0 "g" need not be considered. A combination of comprehensive gust analysis, assessment of affected structure and appropriate operating restrictions have been found adequate bases of approval for a number of designs which have not included vertical restraint.

c. For design of rearward and sideward restraints, a load factor no less than 1.5g should be used.

d. It must be shown that provisions are made to protect aircraft occupants from injury by the cargo during a minor crash landing in accordance with CAR 4b.260 or FAR 25.561. For airplanes certificated under the provisions of CAR 4b, in effect prior to March 5, 1952, the forward crash load factor is 6g instead of 9g. For airplanes certified by other parts prior to 1952, including Aeronautics Bulletin No. 7-A, at least a 6g forward load factor should be used.

e. Means, such as dividers, pens or containers, should be provided to ensure livestock movement will have minimal effect on aircraft cg. In all cases, the cg should remain within certified limits.

f. Cargo compartment floor loading should be checked to determine that it is within the limitations specified for the airplane. Protective means should be provided where necessary to prevent local damage to floor structure and fuselage sides from hooves and horns.

g. Provision must be made for containment and disposal of livestock excreta to prevent contamination and corrosion of airplane systems, equipment and structure. Maintenance inspectors should be particularly aware of any deleterious effects from contamination and corrosion.

h. The Department of Agriculture has emphasized the importance of providing adequate ventilation for livestock, particularly during loading and unloading, and during fuel and maintenance stops. The operator should therefore provide appropriate procedures and instructions to obtain the desired ventilation.

i. Provision must be made for the effects of high humidity on aircraft systems and structure, cockpit environment and welfare of cattle. The operator should provide adequate procedures and instructions to assure the desired humidity is maintained.

j. United States Department of Agriculture Animal Health Division representatives are available at most airport ports of

embarkation and will provide assistance and consultation when requested regarding environmental conditions necessary to ensure animal health during shipments. In addition, the following publication is available: "Transport Livestock Overseas by Air," Department of Agriculture, Agriculture Research Service, ARS 52-38, August 1970.

k. When provision for carriage of livestock involves a major repair or alteration, the data approval should be handled in accordance with Maintenance Certification Procedures Order 8310.4A, Chapter 2, Sections 1, 3 and 4; Air Carrier Airworthiness Inspectors Handbook, Order 8320.12, Chapter 6, Sections 1, 2 and 3; and Order 8110.10C, FAA Approvals of Major Modifications. Prior to September 23, 1977, livestock restraint systems should be approved in accordance with either: (1) a Supplemental Type Certificate (STC); (2) FAA Form 337 with concurrence of respective FAA Engineering and Manufacturing Regional Office or; (3) an Air Carrier Engineering Authorization (E.A./E.O., etc.) which has been approved by the assigned Principal Airworthiness Inspector. After September 23, 1977, approval must be in accordance with STC only.

6. DISCUSSION. Two accidents have occurred in which cargo airplanes were engaged in carriage of livestock. Although not related to probable cause, investigation of these accidents has prompted a reappraisal of existing cargo guidance standards relevant to such cargo installation.

/s/ J. A. FERRARESE  
Acting Director  
Flight Standards Service