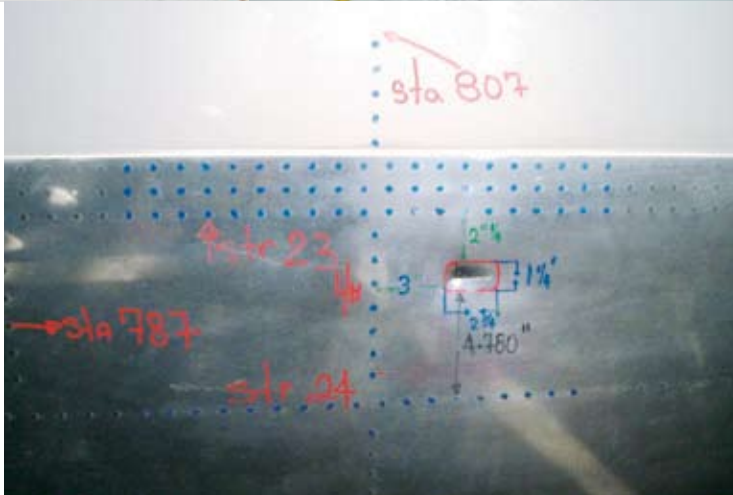


Approved Versus Acceptable Repair Data: How to Make Sure You Have What You Need



CLASSIFYING A REPAIR AS
"MAJOR" OR "MINOR" IS
BASED ON THE COMPLEXITY
OF THE REPAIR AND
THE CAPABILITY OF THE
OPERATOR.

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Boeing aims to provide a quick and accurate response to operator requests for repair data. However, the escalating operator demand for approved repair data can mean longer response times and result in operators having airplanes out of service longer than desired. By understanding the different types of repair data, applicable regulations, and the process for submitting requests for repair data, operators can receive the repair data they need and minimize the length of time an airplane is out of revenue service.

Operators are often faced with a dilemma when determining the type of repair data that is needed to meet regulatory requirements. Under the United States Federal Aviation Administration (FAA) system, repair data can be classified as either “acceptable” or “approved.” In European Aviation Safety Agency (EASA) regulations, all repair data shall be “approved.”

In addition, a new bilateral agreement between the United States (U.S.) and the European Union (EU) is refocusing attention on the issue of approved versus acceptable repair data. Many operators and maintenance, repair, and overhaul (MRO) organizations in the EU are not familiar with “acceptable” repair data because it is not commonly allowed by EASA.

This article defines “acceptable” and “approved” repair data, explains the differences between the FAA and EASA regulations, outlines the repair data section of the new bilateral agreement between the U.S. and the EU, and familiarizes operators with the most effective ways to receive the appropriate repair data needed from Boeing.

**APPROVED VERSUS
ACCEPTABLE REPAIR DATA**

By understanding the type of repair data needed for each classification of damage, operators can minimize delays and return airplanes to revenue service quickly. The FAA and EASA definitions of each classification of damage and authorized repair

data type are summarized in figure 1, and further explained in subsequent sections of this article.

Boeing and the FAA expect appropriately approved airline, maintenance, and MRO personnel to assess whether a repair is major or minor, and to use an assessment process preapproved by their national aviation authority.

FAA SYSTEM

Operators under FAA jurisdiction are responsible for ensuring that repairs are accomplished according to all applicable regulations under U.S. Code of Federal Regulations 14 CFR Part 43. Airplane repairs of damage can be classified as either “major” or “minor.” This assessment is

FAA VERSUS EASA OVERVIEW

Figure 1

Although the FAA and EASA have similar definitions for what constitutes major and minor repairs, the requirement for acceptable or approved data is quite different.

FAA DEFINITION PART 1

MAJOR REPAIR

Major repairs are those that if improperly done, might appreciably affect weight, balance, structural strength, performance, power-plant operation, flight characteristics, or other qualities affecting airworthiness or that; are not done according to accepted practices or elementary operations.

MINOR REPAIR

Minor repair is any repair, other than a major repair.

based on the scope and complexity of the repair and the experience and capability of the operator.

The responsibility for determining whether a repair is major or minor rests with operators, repair stations, and holders of an inspection or maintenance authorization. Because the classification of a repair as either major or minor is not a 14 CFR Part 25 requirement, this classification is outside the scope of FAA authority delegated to Boeing. In the U.S., all operators have authority to use acceptable repair data for minor repairs without additional FAA approval.

FAA Advisory Circular (AC) 43-18 describes acceptable data as data acceptable to the FAA

that can be used for maintenance, minor repair, or minor alteration that complies with applicable airworthiness regulations. Acceptable data can be provided by a type certificate (TC)/supplemental type certificate (STC) holder or third-party operator or MRO qualified engineer.

FAA AC 120-77 defines approved data as: "Technical and/or substantiating data that has been approved by the FAA" or by an FAA delegate such as a FAA-designated engineering representative (DER) or FAA-authorized representative (AR). If the operator's qualified personnel determine the damage necessitates a major repair, then FAA

approval of the repair data is required. Operators have many ways to obtain FAA-approved repair data:

- Accomplish the repair per the Boeing structural repair manual (SRM) because all repairs in the Boeing SRM are FAA approved.
- Apply to the FAA directly.
- Use a DER, who has a "special delegation" from the FAA, to approve data for major repairs using an FAA form 8110-3.
- Where FAA authorization has been delegated to Boeing under delegation option authorization (14 CFR Part 21.231), a Boeing AR may approve the engineering repair data on an FAA form 8100-9.

EASA DEFINITION
PART 21

FAA REPAIR
DATA

EASA REPAIR
DATA

All other repairs that are not minor.

(Ref. EASA GM 21A.91 and GM 21A.435[a])

Approved data from the FAA or FAA designee — designated engineering representative (DER) or authorized representative (AR)

Approved by EASA or EASA design organization approval (DOA)

A minor repair is one that has no appreciative effect on the mass, balance, structural strength, reliability, operational characteristics, noise, fuel venting, exhaust emissions, or other characteristics affecting the airworthiness of the airplane.

Acceptable data from the operator or type certificate (TC)/ supplemental type certificate (STC) holder

Approved data by EASA or EASA DOA; or acceptable data from the TC/STC holder or third party*

* Acceptable data developed under the FAA system for a minor repair will be automatically approved by EASA under the pending U.S.-EU Bilateral Aviation Safety Agreement.

EASA SYSTEM

EASA regulations (Commission Regulation European Community [EC] 2042/2003 Annex I Part M) require “approved” data for both minor and major classifications of airplane repairs. This policy is in contrast to the FAA system that requires “approved” data for major repairs only and “acceptable” data for minor repairs.

Additionally, EU operators under EASA regulations cannot make determinations of minor or major for repairs unless they hold an EASA design organization approval (DOA). EU operators without

an EASA DOA must rely on EASA directly or contract with an EASA-authorized DOA holder to have the repair classified.

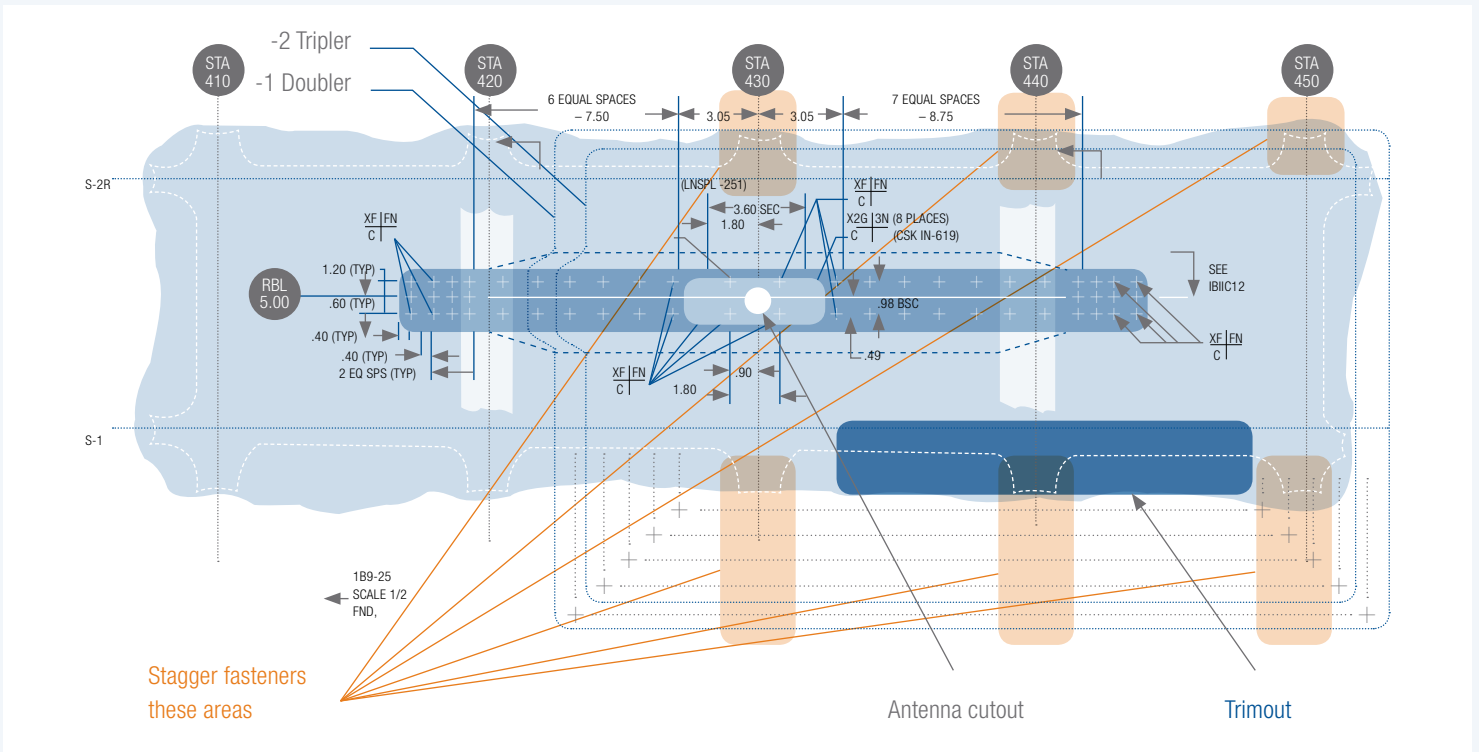
There are different levels of EASA DOA authorization. For example, Basic DOA allows the holder to classify major or minor repairs and approve minor repairs only. A TC/STC holder with an EASA DOA can also approve both major and minor repairs.

Regulations similar to EASA’s are being adopted by global national aviation authorities outside the EU, including Australia and India.

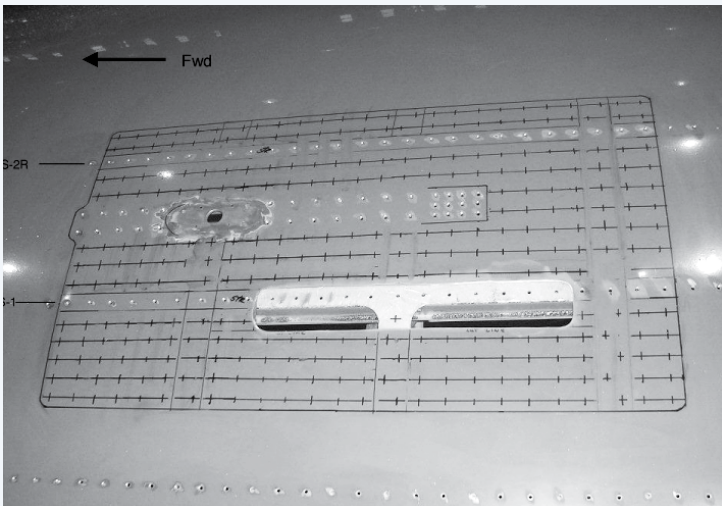
U.S.-EU BILATERAL AVIATION
SAFETY AGREEMENT

Both the FAA and EASA continue to work to harmonize regulations with joint principles and processes. To minimize the impact to operators resulting from two distinct repair data approval systems, a special interim provision from the U.S.-EU Bilateral Aviation Safety Agreement was released on April 1, 2007.

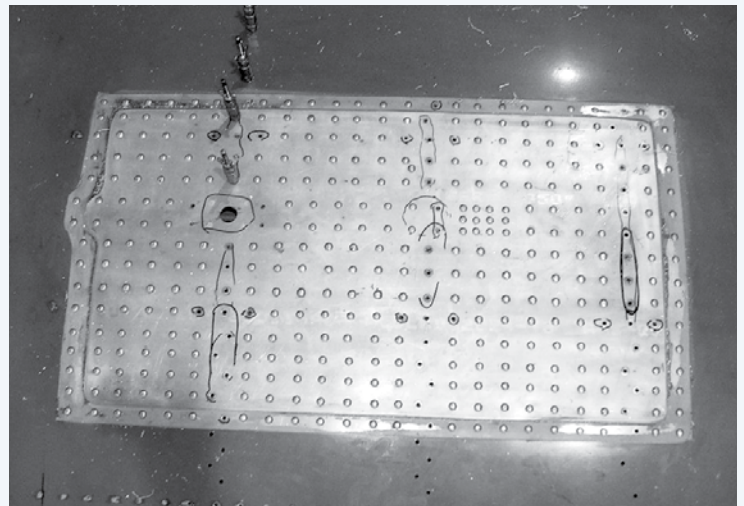
Amending the Implementation Procedures for Airworthiness (IPA) in existing Joint Aviation Authorities (JAA) bilateral agreements between the U.S. and six EU member states (France, Germany,



1. Sample repair design for fuselage skin cracks



2. Operator layout of repair design



3. Operator repair doubler installation

Example of a wing spar chord repair.



Example of a wing spar web splice repair.

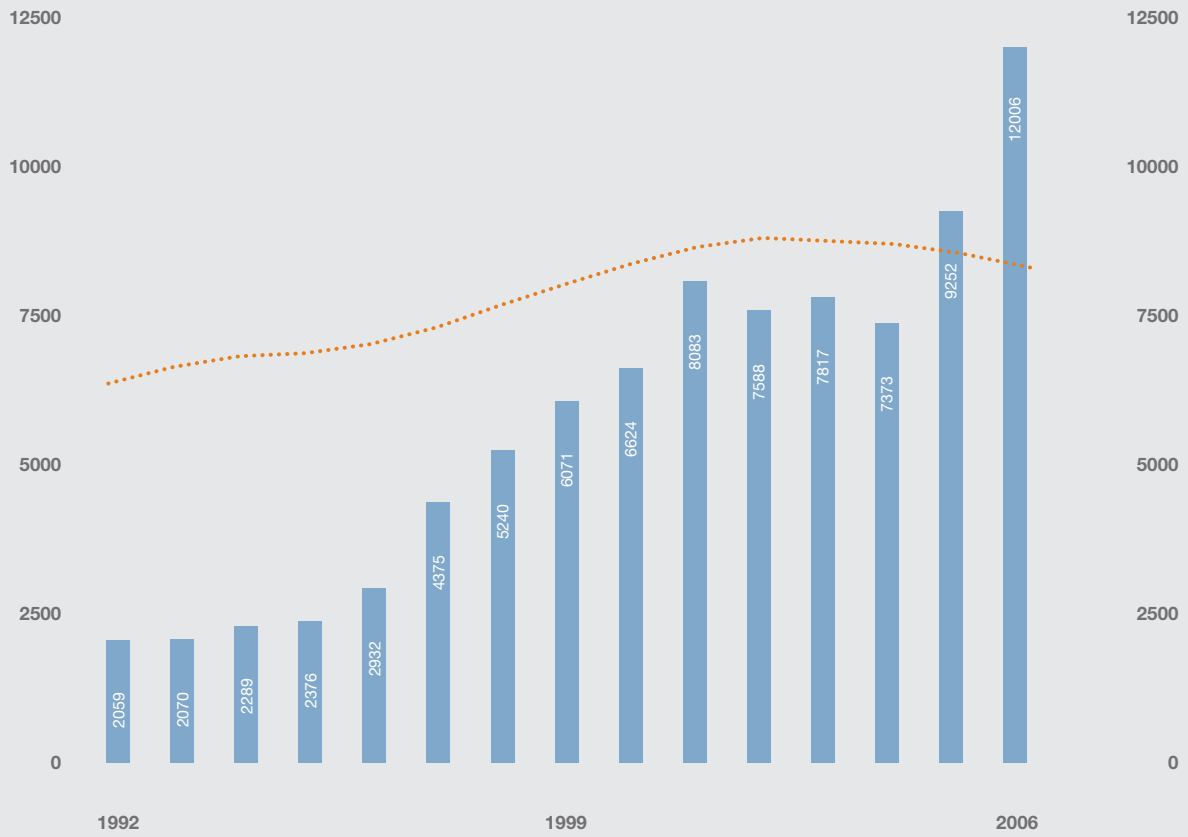


**STRUCTURES 8110-3/8100-9
REQUESTS VERSUS FLEET SIZE**

(707, 727, 737, 747, 757, 767, 777)

Figure 2

■ = 8110-3/8100-9
..... = Fleet Size



The number of requests for approved repair data via an FAA form 8100-9 for 707, 727, 737, 747, 757, 767, and 777 airplanes has increased nearly sixfold since 1992, a rate disproportionate to the growth in the size of the worldwide Boeing fleet.

The data suggests that operators may not fully understand the regulatory requirements that dictate approved versus acceptable data.

Italy, Netherlands, Sweden, and the United Kingdom), this provision clarifies the mutual acceptance of repair data between the FAA and EASA. This allows acceptable structural repair data from TC/STC holders under the FAA system to be automatically approved by EASA.

Although this means Boeing will continue to provide an 8100-9 approval for major repairs, an EU operator and MRO in those six EU member states can now use Boeing acceptable data for minor repairs without additional EASA or EASA DOA approval.

A new bilateral agreement between the U.S. and the EU is planned to be signed in the near future, allowing implementation of the mutual acceptance of repair data by all EU member states.

GROWING DEMAND FOR APPROVED DATA

During the last 15 years, Boeing has seen a significant increase in demand for approved structural repair data requests from operators, while the number of Boeing airplanes in the fleet has remained somewhat level (see fig. 2). This increase primarily involves Boeing 707, 727, 737, 747, 757, 767, and 777 airplanes. The demand for approved structural repair data for the Douglas fleets — DC-8, DC-9, MD-80/90, DC-10, MD-11, etc. — has remained relatively steady during the last several years.

The aging of the airplane fleet alone does not appear to explain this significant increase in operator requests. The data suggests that operators may not fully understand the regulatory requirements that dictate approved versus acceptable data, or are asking for approved data for nonregulatory purposes, such as for records to support future airplane ownership transfer. There is also a higher demand for approved data from EU member states than the rest of the world.

The increased demand challenges Boeing Delegated Compliance Organization resources, resulting in extended — and often unnecessary — airplane downtime.

HOW OPERATORS CAN GET THE DATA THEY NEED FROM BOEING

Boeing encourages all operators and MROs to use the Boeing SRM whenever possible, because all repairs in the SRM have been approved by the FAA. Additionally, operators and MROs should familiarize themselves with FAA AC 120-77, which provides guidance for minor deviations from allowable damage limits in the SRM and other manufacturer's service documents resulting in greater applicability to more repairs.

Finally, when submitting a request to Boeing for either acceptable or approved repair data, follow the process contained in the appropriate multi-

model service letter "BCA Review and Delegated Approval of Airplane Structural Repair and Modification Data" (e.g., 737-SL-51-027-E). Using this process helps ensure that all the information needed to evaluate the repair design is available and can be efficiently processed.

SUMMARY

Boeing strives to provide accurate and responsive fleet support to operator requests for repair data. By understanding applicable regulations, using the Boeing SRM, and following established procedures, operators can receive the information they need efficiently, reducing airplane downtime. The value of structural repairs contained in the Boeing SRM is that they are available for immediate use by the operator and are approved by both the FAA and EASA.

For more information, please contact your local Boeing Field Service representative or Dale Johnson at dale.r.johnson2@boeing.com or Ron Lockhart at ronald.j.lockhart2@boeing.com. 