Federal Aviation Administration

Transport Certification Update

Inside:

Applying lessons learned from accidents and more...

"On the Cover," page 14

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Northwest Mountain Region, Federal Aviation Administration,
Department of Transportation

Transport Certification Update

From the Directorate Manager: November 14, 2009 - An important deadline

An important date is fast approaching: November 14, 2009. On that day, all approvals for previous organizational delegation types such as Delegated Option Authorization (DOA), and Delegated Alteration Station (DAS) will become invalid.

From that date forward, the only valid type of organizational delegation for aircraft certification will be Organization Delegation Authorization (ODA). If any organization with type, production, or airworthiness approval wants to remain a delegated organization, it must transition to ODA by then.

November 14 is much more than just another date on the calendar or a milestone on a project timeline. It is a culmination of many years of work by the Office of Aviation Safety and Aircraft Certification Service to improve, streamline, and standardize the oversight of delegated organizations.

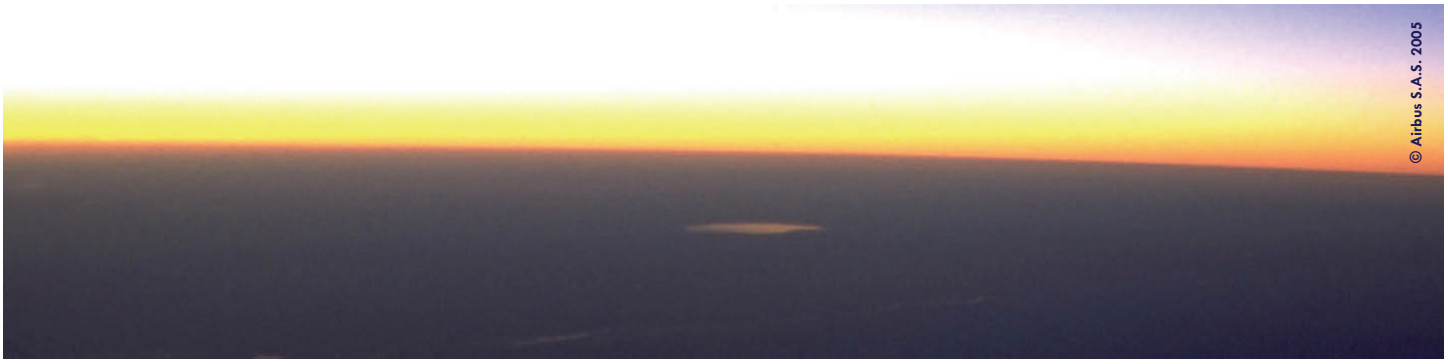
ODA will be a better and more consistent standard for the interaction between the FAA and the delegated organizations. More importantly, ODA will enable a fundamental shift in the way we work together on aircraft certification, production approval, and continued operational safety. It will help implement Safety Management Systems and allow the Aircraft Certification Service to focus on high-priority safety initiatives and programs.

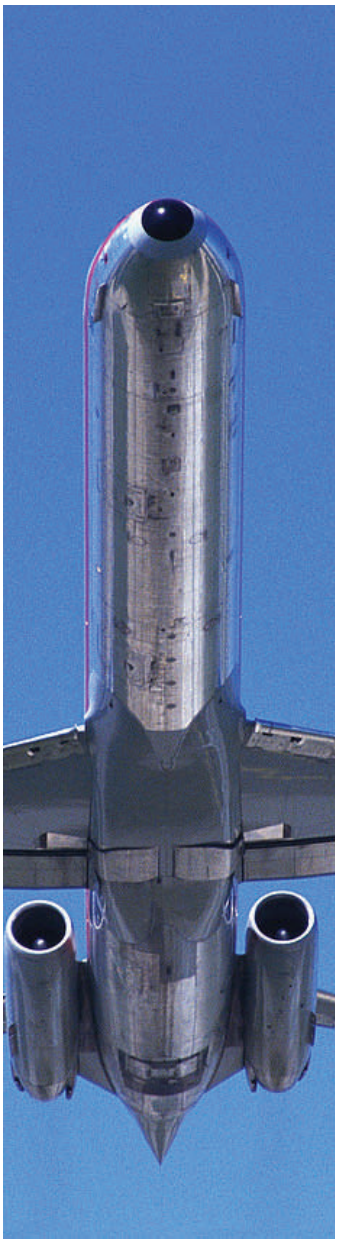
Upon publication of the ODA rule (70 FR 59931, October 13, 2005), the Aircraft Certification Service began a proactive program to work with the affected delegated organization to assure timely and smooth transition prior to November 14, 2009.

The Transport Airplane Directorate sponsored seminars for existing delegated organizations and interested companies within our region, established teams to support interested companies during the transition, and supported nationwide standardization seminars. Thanks to all stakeholders, we are on target to meet the upcoming deadline. We planned for a successful transition and, in most cases, we are on target.

For delegated organizations that fail to meet this deadline, there may be delays and disruptions in ongoing projects that go beyond the deadline. So, if you have an existing organizational delegation and plan to transition it to ODA, please keep November 14, 2009, in mind. The transition doesn't have to be difficult, but it does take time. And time is growing short!

~Ali Bahrami





Features

Departments

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9-ANM-TAD-Update@faa.gov

Transport Airplane Directorate (TAD) Organization

Ali Bahrami, Manager ❖ Steve Boyd, Assistant Manager

Technical and Administrative Support Staff,
John V. Barrett, Manager

Manufacturing Inspection Office,
Linda Navarro, Manager

Transport Standards Staff,
Mike Kaszycki, Manager

Denver Aircraft Certification Office,
Todd Dixon, Manager

Seattle Aircraft Certification Office,
Jeff Duven, Manager

Los Angeles Aircraft Certification Office,
Kevin Hull, Manager

Applying lessons learned from accidents

A new Web-based knowledge system aims to equip today's aviation workforce with the knowledge of lessons learned from transport airplane accidents. See the Web site at http://accidents-ll.faa.gov/.

Commercial aviation safety is unparalleled in the history of transportation, with travel aboard a commercial jet so safe that the odds of an accident are described by a fraction of a decimal.

This achievement can be credited in part to carefully evaluating past practices, and applying the lessons that can be learned from them to future aviation work. Some of the most important lessons, and some of the most costly, have often been those associated with accidents. With each accident, the aviation industry has sought to reduce the likelihood of recurrence by understanding the causes, documenting the findings, and applying targeted solutions. This represents the most fundamental attribute of the continuously improving process that has existed within the aviation community.

But no accident report can capture or retain the knowledge of the people who have the detailed understanding of the assumptions, technology, and organizational culture that are nearly always underlying factors in each accident. As experienced people in the industry and the FAA retire or change jobs, they can take with them a career's worth of information, and at times vital knowledge about particular accidents. Some of this knowledge involves the lessons that are only revealed by a thorough understanding of the accident causes, and the solutions that were eventually applied.

As this understanding fades with time, key information, including lessons, may not be readily available to others to use in order to recognize precursor information that is often available prior to an accident. The risk can increase for accidents to be repeated for reasons already experienced, and already learned. To retain that knowledge and slow or reverse the erosion of key safety information within the aviation community, the FAA, with support from industry at large, has developed a Web-based knowledge system, or "library," called Lessons Learned from Transport Airplane Accidents.

Library of Lessons Learned

The Lessons Learned library, now in its third release, lists 33 major airplane accidents that affect the way the aviation industry and the FAA conduct business today. The accident library is arranged by a comprehensive listing of "threat categories" and "common themes" within which all accidents can be identified. These categories and themes have been observed through analysis of accidents since the 1950s. The FAA's goal is to populate the library with the vast majority of historically significant accidents, so that by studying the accidents within the various categories and themes, the user may become aware of the key lessons within that area of knowledge.

The library will continue to be developed. We expect it to contain 50 accidents by the end of this year. Once each of the categories and themes is

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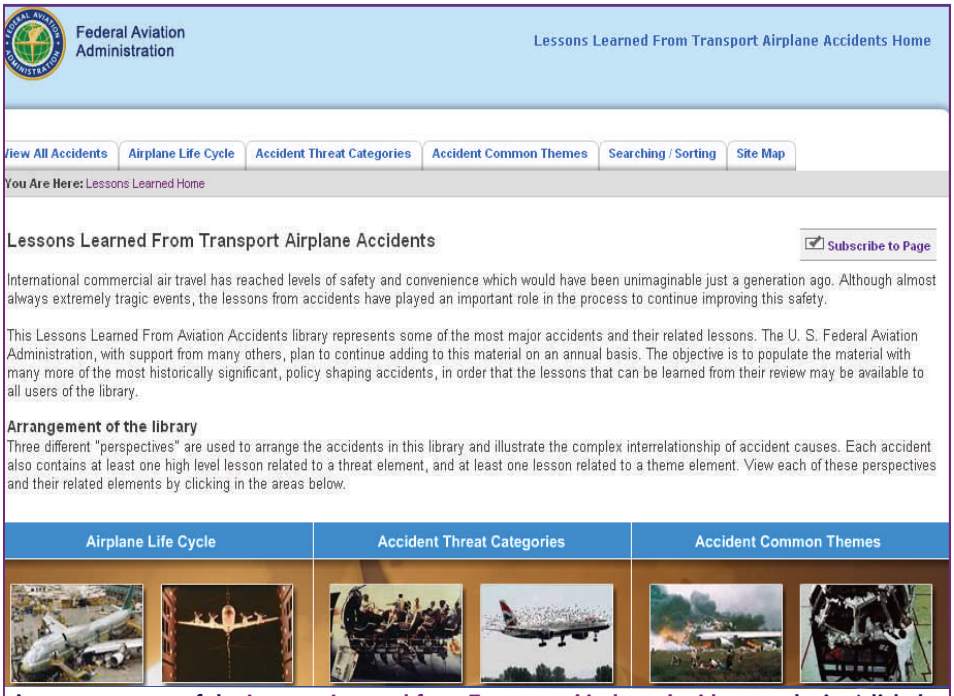

A screen capture of the Lessons Learned from Transport Airplane Accidents web site (click the link or, from FAA.gov, select the Data and Research tab at the top of the page, the select "Safety" on the left. The link to the web site is about halfway down the page). Users may subscribe to the page to receive notification when new information is added to the site.

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populated with a comprehensive collection of each of the key accidents within these various areas, the process will begin to shift to a "sustaining" mode. Should additional significant accidents occur, with additional lessons to be learned, those will then be captured in the library material annually.

Each entry features the accident investigation findings, resulting safety recommendations, and subsequent regulatory and policy changes, if any. Each entry also includes sections on the unsafe conditions that existed, precursors that pointed to an impending accident, and the basic safety assumptions made about an airplane's design, or its operating and maintenance programs.

Most importantly, the lessons learned from the accident investigation are explained in detail, and grouped logically into relevant technical areas and common themes, such as organizational lapses, human error, flawed assumptions, preexisting failures, and unintended consequences of previous efforts to improve a feature or system. The information is cross-referenced so that users can explore accidents through different perspectives, such as the types of aviation threats and common themes.

Short animated videos provide a clear understanding of sometimes very technical information. For instance, an animated reenactment of the Air Florida accident in Washington, D.C., involving a Boeing Model 737 airplane, shows an intended takeoff route for the aircraft, followed by what actually occurred (to view, go to the Air Florida 737 in Washington D.C. accident, select the Accident Overview, then select "View Air Florida takeoff animation" toward the end of the page).

Learn the Lessons

The new library presents a high-level treatment of all aspects of an accident "life cycle," which can often span a decade or more from the accident to its final resolution. Factors that form the background for the accident (e.g., safety assumptions, standard industry practices, and technology limitations) may have origins from many years earlier and can be very important in understanding the accident's true causal factors. The library includes the background material and uses available accident documents and supporting information to capture both the investigation and resolution aspects of the accident's life cycle.

The targeted audience for the material includes designers, maintenance staff, pilots, engineers, academics, students, and the general public.

The library does not present new information about any accident, and does not re-investigate; instead it provides a convenient collection of material that was generated before, during, and after the investigation process. Blame and fault are not included in any aspect of the accident material; only the facts that were revealed, and what was done about them.

The purpose of the library is to enhance the understanding of the causes of many of the most major accidents. This understanding of the lessons related to the accidents will benefit aviation safety by passing knowledge from yesterday and today to those who will deliver the safety of aviation into the future. Aviation professionals should take some time to peruse the many lessons to be learned. ❖

If you have questions or comments about this article, please email us at: 9-ANM-TAD-Update@faa.gov

Failure to Learn

The following is from the article titled "Information, Quality, Liability, and Corrections," in *Information Today*, September/October 2003. The article was written by Stephen Adams, managing director of Magister Ltd.

Even in the best-regulated system, there's a failing that is extremely hard to make provision for – the failure to learn from experience. There are myriad examples of information users reinventing the wheel – or more commonly, making the same mistake – as a result of a failure to retrieve and utilize a comprehensive set of teaching from previous recorded literature….

♦ *In September 2001, there was a fatal explosion at an ammonium nitrate plant owned by Atofina. In subsequent months, various letters [Letters to the Editor. Chemistry in Britain, vol. 38, no. 2 (February 2002): p. 20 and vol. 38 no. 4 (April 2002): p. 22] appeared speculating that the explosion was caused by the same or similar mechanism to that which occurred in the harbor of Texas City in April 1947, involving the same chemical. One of the letters noted that a possible mechanistic explanation of the Texas City explosion had been in the literature since 1960.*

♦ *There has been much interest recently in so-called "economy-class syndrome," a form of deep-vein thrombosis (DVT) apparently linked to sitting for long periods in cramped conditions, such as on long-haul aircraft flights. A letter [Letters to the Editor. Chemistry in Britain, vol. 38, no. 4 (April 2002): p. 24] noted the existence of a "travel advisory" strikingly similar in content to the current airline "well-being programs," such as taking periodic breaks to move around and exercising limbs in a sitting position. The author concerned had been writing about travel by stagecoach in 1789. (Used by permission)* ❖

Reducing the risk of in-flight fire

Upgrading standards for insulation blankets

Early air travel was loud, cold, and uncomfortable. According to information from the National Air and Space Museum, air travelers in the 1920s experienced noise during takeoff of a Ford Trimotor that was 120 decibels. The threshold of pain is 130 decibels.

By the 1930s, new airplanes had soundproofed cabins, ventilation ducts, and structure. The soundproofing doubled as insulation (called "thermal/acoustic"). With heating systems installed, passenger comfort increased exponentially and commercial aviation took off.

Over time, the flightcrew went from yelling at passengers through small megaphones to settling them in for a movie in a comfortable cabin where conversation at normal levels is possible.

But comfort brings complexity. Even everyday items as seemingly benign and common-place as insulation or a television, when introduced to the airplane cabin, can become the source of an unsafe condition; any material that is susceptible to ignition and that could propagate a fire could be considered unsafe under certain conditions.

The thermal/acoustic insulation in today's transport category airplanes is usually a "blanket." Insulation blankets are made from a batting material (fiberglass) that is covered with a thin film that contains the batting and resists moisture. Two types of film coverings were identified as sources of unsafe conditions because of the way they behave when exposed to certain ignition sources, such as electrical arcs or sparks:

- Metalized polyethylene teraphthalate (MPET), sometimes referred to as "metallized Mylar®," and
- AN-26, which is a non-metalized PET.

In contrast with the endurance test of early commercial aviation, the Boeing 787 Dreamliner interior is designed "to connect the passenger with the flying experience."

A new standard

On September 20, 2000, the FAA proposed a new flammability standard for thermal/acoustic insulation, titled "Improved Flammability Standards for Thermal/Acoustic Insulation Materials Used in Transport Category Airplanes," which became final on September 2, 2003.

The new standard includes changes to operating rules for newly manufactured airplanes. It also discusses criteria by which materials already in use and certificated through an earlier standard can be assessed for their safety to retain in service.

Photo courtesy of the Library of Congress

Interior of Ford Trimotor with "club" type cabin furnishings.

These criteria include measuring a material's susceptibility to an ignition source (such as an electrical arc or spark) and its tendency to propagate a fire once ignited.

The new standard resulted from a thorough examination of the flammability characteristics of MPET and other thermal/acoustic materials previously certificated for use on transport category airplanes, and also led to a recent Airworthiness Directive that addresses safety concerns related to AN-26 (see the table on page 7).

MPET

In 1993, an electrical wire on a Scandinavian Airlines McDonnell Douglas Model MD-87 airplane short-circuited and ignited the thermal/acoustic insulation as the airplane was taxiing. All passengers escaped, but the airplane

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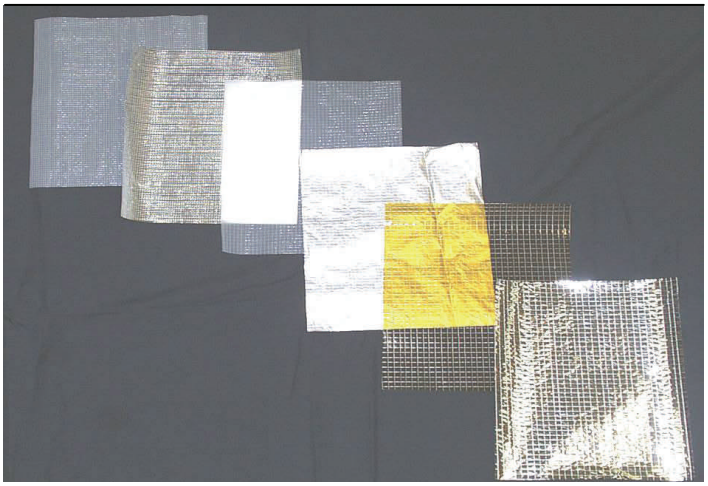
was destroyed. Investigation showed that the wires had been installed between layers of thermal/acoustic insulation.

The Transport Airplane Directorate, the FAA's William J. Hughes Technical Center, and experts from industry and educational institutions tested the MPET material involved in the MD-87 incident. The group also worked together to initiate a series of large-scale fire tests as well as tests for ignitability for a broad range of materials.

By the late 1990s, the FAA had concluded that the certification standard for testing flammability was not adequate to determine the flammability characteristics of the covering material for insulation. We needed a new certification standard, so we began work on the improved flammability standard, described above.

The work on the new standard was ongoing when Swissair Flight 111 – a McDonnell Douglas Model MD-11 airplane – crashed into the Atlantic Ocean off the coast of Nova Scotia in September of 1998, after the crew declared an emergency related to an in-flight fire. The Transportation Safety Board of Canada, after a 4-year investigation, came to several conclusions including the following from its accident investigation report (large PDF):

> *A segment of in-flight entertainment network (IFEN) power supply unit cable (1-3791) exhibited a region of resolidified copper on one wire that was caused by arcing. This arc was likely associated with the fire.*



Samples of film moisture barriers for insulation are shown above. The center sample is metalized polyethylene teraphthalate (PET). The yellow/orange sample is polyimide (Kapton). The remaining samples are versions of polyimide: the silvery material is metallized and the translucent material is non-metallized.

Arc testing conducted on MPET.

> *MPET-cover material on the thermal acoustic insulation blankets was most likely the first material to ignite, and constituted the largest portion of the combustible materials that contributed to the propagation and intensity of the fire.*

At the time we proposed the new flammability standard for thermal/acoustic insulation, MPET was the only material that had demonstrated a propensity to propagate a fire from an ignition source.

To ensure safety on airplanes with MPET installed, we issued three Airworthiness Directives (addressing different airplane types) that require removal and replacement of MPET (see the table on page 7). We also indicated that we would take the same action if we identified insulation materials other than MPET that are subject to the same unsafe condition.

AN-26

In evaluating various materials, we found that a material called AN-26 could propagate a fire from an electrical arc. Even though AN-26 met the certification standards in place in 1981, it failed when it was tested using the new testing method for vulnerability to arc and spark. We cannot always rely on prior certification standards to adequately distinguish between acceptable and unacceptable materials.

We verified, using the new assessment methods, that AN-26 could propagate a fire when subjected to electrical arcing and sparks. In addition, service history showed incidents in which ground personnel or flightcrews had extinguished fires, and incidents in which fires self-extinguished. Those

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incidents took place in several areas of the airplane, but primarily in inaccessible areas hidden from passengers and flightcrew.

As a result, we issued AD 2008-23-09, effective December 15, 2008, to require removing all AN-26 and replacing it with compliant insulation.

The AN-26 insulation material is installed behind, in, and around all airplane systems and associated wiring. It is time-consuming to access; removing the insulation blankets requires removing the entire interior of the airplane as well as doing meticulous work around critical systems.

Unlike MPET, which is easily distinguishable, AN-26 is similar in appearance to other types of insulation.

AN-26 is used extensively behind the sidewalls of the main cabin.

Unfortunately, there is no way to know for sure if AN-26 is installed in a particular area of the airplane without removing those interior components covering the insulation. Most parts on an airplane are identified by part markings; however, not all AN-26 or other insulation blankets have part markings. We have, though, found several methods for identifying AN-26.

Operators have 8 years to comply with AD 2008-23-09. Ensuring that all of the insulation blankets are removed is best performed during a planned heavy maintenance check, which occurs in cycles of up to 8 years, when operators have arranged to gain access to the areas of the airplane where the insulation blankets are located. In addition, as part of the aging airplane safety program, we issued the Enhanced Airworthiness Program for Airplane Systems/Fuel Tank Safety rule, which enhances wiring safety and reduces the amount of combustible material present on the wires and surrounding systems and structure. The effect of this rule is to reduce the risk of faults that might cause ignition. Further, we do not want to introduce potential damage to critical systems and equipment by not allowing enough time for operators to make the modifications properly.

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Airworthiness Directives for insulation blankets

Insulation type	AD number(s)	Requirement	Compliance time
MPET	AD 2000-11-01, effective June 30, 2000; AD 2000-11-02, effective June 30, 2000; and AD 2003-08-10, effective May 27, 2003	Remove and replace MPET insulation	5 years after the effective date of the AD
AN-26	AD 2008-23-09, effective December 15, 2008	Remove and replace AN-26 insulation	8 years after the effective date of the AD

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* * * * *

With a new standard and required actions in place for both in-service and newly manufactured airplanes, the potential for a fire propagated by insulation blankets will continue to be greatly reduced.

We will continuously improve standards and monitor the performance of all materials in the fleet of transport category airplanes. ❖

If you have questions or comments about this article, please email us at: 9-ANM-TAD-Update@faa.gov

AN-26 around system wiring overhead in a flight deck is complex to identify and remove.

The purpose of the Transport Certification Update is to provide the aviation community-at-large and designees with the latest information concerning regulations, guidance material, policy and procedure changes, and personnel activities involving the certification work accomplished within the FAA Transport Airplane Directorate's jurisdictional area. Although the information contained herein is the latest available at the time of publication, it should not be considered "authority approved," unless specifically stated; neither does it replace any previously approved manuals, special conditions, alternative methods of compliance, or other materials or documents. If you are in doubt about the status of any of the information addressed, please contact your cognizant Aircraft Certification Office (ACO), Manufacturing Inspection District Office (MIDO), or other appropriate FAA office.

Related reports from the office of aviation research

"Evaluation of Fire Test Methods for Aircraft Thermal Acoustical Insulation" (DOT/FAA/AR-97/58, published September 1997)	… presents the results of laboratory round-robin flammability testing.
"Fire-Resistant Materials: Research Overview" (DOT/FAA/AR-97/99, published December 1997)	… provides an overview of the research conducted by the FAA to develop fire-safe cabin materials for commercial aircraft.
"Development of Improved Flammability Criteria for Aircraft Thermal Acoustic Insulation" DOT/FAA/AR-99/44, published September 2000)	… discusses the development of new flammability test standards for aircraft thermal/acoustic insulation.
"A Preliminary Examination of the Effectiveness of Hand-Held Extinguishers Against Hidden Fires in the Cabin Overhead Area of Narrow-Body and Wide-Body Transport Aircraft" (DOT/FAA/AR-TN04/33, published July 2007)	… determines the performance of the Federal Aviation Administration-required, hand-held Halon 1211 extinguishers against a fire in this area when discharging the agent through a ceiling-mounted port.
"Nonhalogen Fire-Resistant Plastics for Aircraft Interiors" (DOT/FAA/AR-TN08/5, published January 2008)	… presents strategies for developing fireproof aircraft cabin materials in light of environmental legislation that restricts the use of halogens in plastics.
"Development of an Improved Fire Test Method for Aircraft Ducting Materials" (DOT/FAA/AR-08/4, published February 2008)	… describes a comprehensive fire test program conducted on aircraft ducting materials in an effort to continue mitigating the threat of in-flight fires.

What every designee should know about Airworthiness Directives

Recent high-profile events illustrate the importance of understanding ADs

An AD (short for Airworthiness Directive) is a substantive regulation issued by the FAA.

An AD addresses an unsafe condition found on an airplane that is likely to exist or develop on other airplanes of the same type design. Airplanes affected by an AD may not be operated except in accordance with the AD.

What information is common to all ADs?

Every AD includes two sections: the preamble and the AD body.

The **preamble** provides the public with sufficient information to form an opinion to comment on the proposed requirements and cost estimates in the AD. The preamble of domestic ADs includes four sections:

- The *Summary* briefly describes the affected airplanes, the requirements, and the unsafe condition.
- The *Discussion* describes the incident or the findings that prompted the AD. In this section we explain the unsafe condition, its cause if known, and what could happen to the airplane if we don't issue the AD.
- The *Relevant Service Information* section describes the service information operators must use to do the required actions.
- The *Explanation of the Requirements* section summarizes the AD's required actions.

Most AD preambles also include a *Costs of Compliance* section. This section gives our best estimate of the costs to comply with the basic AD requirements. The cost estimate lets us know the impact of the AD on operators.

The **AD body** is the regulatory text, the requirements of the AD. We consider every word carefully since this section must be legally enforceable.

In every AD, operators are advised that they must comply with the AD—unless they can verify that the required actions were previously done in accordance with the requirements of the AD.

Other AD provisions typically include a description of any differences between the AD and the service information/ mandatory continuing airworthiness information (MCAI), which is an AD that

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What is a designee?

The designee system aids in the process of certificating airplanes by designating private citizens to act as representatives of the FAA Administrator. A designee might be an individual, as described in 14 CFR §183 subpart C, or an organization granted an Organization Designation Authorization (ODA) under 14 CFR § 183 subpart D. Qualification requirements and the types of functions that designees perform are described in Orders 8100.8C for individuals, and 8100.15 for ODA. (Other types of current delegated organizations, such as Designated Alteration Stations, must convert to ODA by November 14, 2009.)

Engineering designees are called Designated Engineering Representatives (DERs). They may approve data for compliance with airworthiness standards. Manufacturing designees are called Designated Manufacturing Inspection Representatives (DMIRs) or Designated Airworthiness Representatives (DARs). Manufacturing designees may make conformity determinations in support of design approvals, and may also issue airworthiness certificates and approvals.

Organizations with ODA may perform both types of functions, being granted authority to approve changes to type design or even issue Supplemental Type Certificates (STC). These types of programs usually require that the organization notify the FAA of the project, and the FAA participates in specific areas of the project as necessary.

Where is the unsafe condition stated in an AD?

The statement of the unsafe condition appears in the Summary in most ADs, and in a paragraph titled either "Unsafe Condition" or "Reason." The statement might be something like "We are proposing this AD to prevent fatigue cracking of the front spar web, which could result in fuel leaking onto an engine and a consequent fire."

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comes to us from an international authority), information about alternative methods of compliance (AMOCs), and material incorporated by reference.

Where can you find ADs?

The *Federal Register* is the official publisher of all regulations, including ADs.

Click on the following to:

- Find a document in an AD docket in the Federal Docket Management System (FDMS),
- Search for a specific document in the *Federal Register*,
- Find an AD published today, or
- Find an AD on public display at the *Federal Register*.

You may also look in the Regulatory and Guidance Library.

What are the different types of ADs?

Not all ADs are the same. When you view ADs in the *Federal Register*, you might see any of the AD types described below. The AD type is identified on the first page of the AD as the "ACTION."

We issue an **emergency AD** for the most urgent safety risks. Emergency ADs are distributed by fax for transport airplanes. We follow up the fax by issuing a "**Federal Register version**," which is published in the *Federal Register* and posted on FDMS. The Action line is "Final rule; request for comments."

We issue an immediately adopted rule (**IAR**) for an urgent safety risk (but not the most urgent). The IAR action is also referred to as a "Final rule; request for comments." The FAA must show good cause for not giving the public an opportunity to comment on the merits of the requirements and the costs of the AD.

We issue a notice of proposed rulemaking (**NPRM**) for the least urgent safety risk. An NPRM is the most commonly issued type of action, and is followed by a final rule.

Incorporation by Reference (IBR)

"Incorporation by reference (IBR) allows federal agencies to comply with the requirement to publish rules in the *Federal Register* and the Code of Federal Regulations (CFR) by referring to materials already published elsewhere."

~ From the CFR website

What happens when we change an existing AD action?

We **supersede** an AD when we learn that some part of the existing AD is no longer adequate. For example, more airplanes are affected or new findings suggest we need to require additional actions or we need to shorten the compliance time. In drafting the AD, the writer needs to carefully consider the requirements of the existing AD to ensure that there are no conflicts with the new requirements. We need to ensure that we carry over the appropriate requirements so that there is no unintended

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What an AD might look like in the *Federal Register*

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA–2008–0590; Directorate Identifier 2008–NM–057–AD]

RIN 2120–AA64

Airworthiness Directives; Boeing Model 747–100, 747–100B, 747–100B SUD, 747–200B, 747–200C, 747–200F, 747–300, 747–400, 747–400D, 747–400F, and 747SR Series Airplanes

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of proposed rulemaking (NPRM).

SUMMARY: We propose to adopt a new airworthiness directive (AD) for all Boeing Model 747–100, 747–100B, 747–100B SUD, 747–200B, 747–200C, 747–200F, 747–300, 747–400, 747–400D,

The Proposed Amendment

Accordingly, under the authority delegated to me by the Administrator, the FAA proposes to amend 14 CFR part 39 as follows:

PART 39—AIRWORTHINESS DIRECTIVES

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

§ 39.13 [Amended]

2. The FAA amends § 39.13 by adding the following new AD:

Airbus: Docket No. FAA–2008–1365; Directorate Identifier 2008–NM–076–AD.

Comments Due Date

(a) We must receive comments by February 6, 2009.

Affected ADs

(b) None.

Beginning of the Summary of an AD notice of proposed rulemaking (left) and the regulatory text (body) of a different AD as they appear in the *Federal Register*.

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lag for any airplanes in doing the requirements, so we don't unintentionally ground airplanes. Once an AD is superseded, only the new version may be used.

We **revise** an AD to make a non-substantive change to an existing AD that provides relief to operators. This change is less burdensome to operators. In the case of a revision, operators may use any version of the AD.

We **withdraw** an NPRM or **rescind** an AD when we have sufficient information that (1) the unsafe condition no longer exists on any airplane (worldwide), and (2) the unsafe condition can't be reintroduced if the existing AD action is removed.

After we issue an NPRM the public may comment on the proposed requirements and cost estimate. Usually we follow up the NPRM by addressing the comments in the final rule. Occasionally, we have new information that suggests we need to change the NPRM. When that change means extra work for those affected by an AD, we must first issue a **supplemental NPRM** to solicit comments on the new requirements before we can issue the final rule.

What is the AD process? How does an AD get issued?

Once an unsafe condition has been identified, an engineer from the responsible Aircraft Certification Office (ACO) prepares an AD proposal worksheet. Then a technical writer works closely with the engineer to draft the AD. The AD is then reviewed by ACO management, the Aircraft Evaluation Group (AEG), Manufacturing Inspection District Office (MIDO) (if the AD is related to quality control), legal counsel, and directorate management.

After coordination is complete, the AD action is signed by the product's directorate manager, published by the Office of the Federal Register (OFR), and posted on the FDMS and the OFR and FAA websites.

Anyone can also be notified by email when ADs for all or specific models are available. To do so, go to the Regulatory and Guidance Library), select the link titled Subscribe to ADs and SAIBs, and follow the subscription instructions.

You might also want to know about …

Usability of ADs. In an ongoing effort to provide operators with clear, understandable ADs, we continually review and monitor the readability of our AD language. Recently we have implemented some changes to the AD format.

- **Plain language.** In 2000, we began rewriting the standard language (the text found in all AD actions) in plain language. We make every effort to write plainly, with the simplest words and sentence structure possible.
- **Part 39 changes.** In an effort to shorten ADs, we recently moved into part 39 of the Federal Aviation Regulations some provisions that were included in essentially every AD: (1) a note that explains that modifications to an airplane could affect the ability to comply with the

(Continued on page 12)

Featured Web Site:

Transport Airplane Directorate

From the web site: "The Transport Airplane Directorate has oversight responsibility for transport category airplane design approvals and modifications worldwide, as well as oversight responsibility for over 900 production approval holders. The Transport Airplane Directorate works closely with other FAA offices throughout the country and with foreign regulatory authorities to accomplish this mission."

The site includes contact information and links to field offices: Aircraft Certification Offices (ACOs), Manufacturing Inspection District Offices (MIDOs), and Manufacturing Inspection Offices (MIOs).

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AD, (2) certain AMOC provisions, and (3) the special flight permit provision. Otherwise, the AD must specify any deviations from part 39.

- **AD-friendly**. In 2001, we began a joint venture with Boeing to make some changes in airplane service bulletins that will include language that is easily adopted into ADs. This "AD-friendly" effort has since spread to other airframe manufacturers.

Language of note in ADs. To be enforceable, ADs include some very carefully chosen and much-debated language. ***In accordance with.*** When an AD requires a specific source of service information for a particular action, we typically state that the action must be done "in accordance with" that service document. ***Check.*** Although a service bulletin might specify a "check" for some discrepancy, we need to apply this term with care in an AD because, by definition in the *Federal Aviation Regulations*, a "check" may be done by any personnel, including the flightcrew.

Corrective actions in ADs. The AD must specifically identify the appropriate required repairs, the repair source of service information (such as a service bulletin), and the compliance time (e.g., before further flight after discovery of structural cracks). In certain cases, the AD might specify that operators should contact the FAA for repair instructions.

MCAI. We typically write ADs on products manufactured in another country by closely following the MCAI we receive from the state of design authority. In 2006, we started writing these ADs in a unique format. FAA Order 8040.5 specifies the guidelines for writing MCAI ADs. The MCAI format requires that the MCAI text and requirements be copied verbatim where possible.

Why is it important for designees to know about ADs?

Designees have specific responsibilities regarding ADs. Because ADs may contain information necessary for designees to perform their authorized functions, designees need to know what they may, may not, and must do with respect to areas affected by ADs. DERs or ODA holders, for example, might be authorized to approve AMOCs for structures-related ADs. The FAA must assess the designee's qualifications for approving the AMOC for each particular AD.

Designees need to be aware of any AD requirements that apply to the products they're working on (e.g., for a Supplemental Type Certificate project). Designees approving data must ensure that their data approvals are compatible with any previously complied-with AD. And, before issuing an airworthiness certificate, manufacturing designees must ensure that the product is in compliance with all applicable ADs. See FAA Orders 8110.37 and 8110.4. ❖

If you have questions or comments about this article, please email us at: 9-ANM-TAD-Update@faa.gov

Mandatory Continuing Airworthiness Information (MCAI) — ADs we receive from international authorities

Photo courtesy of EMBRAER, a Brazilian Aircraft Manufacturer

The FAA might respond with an AD of its own when it receives mandatory continuing airworthiness information (MCAI) from another state of design authority. One such authority is Agência Nacional de Aviação Civil (ANAC), which is the state of design authority in Brazil for these Empresa Brasileira de Aeronautica S.A. (EMBRAER) airplanes.

Transport Airplane Directorate (TAD) Regulatory Radar

Current Rulemaking

The following rulemaking actions have been published in the *Federal Register* or became effective since the last issue of the *Transport Certification Update*. For full text of these and other actions see: regulations.gov.

Final Rules:

Airworthiness Standards; Propellers. Docket No. 2007-27310; Final Rule (FR) issued 10/12/2008, effective 12/23/2008. Amendment No. 25-126.

This amendment addresses advances in technology of the past twenty years and harmonizes FAA and European Aviation Safety Agency propeller certification requirements. Furthermore, it simplifies airworthiness approvals for imports and exports.

Security considerations. Docket No. FAA-2001-11032; FR issued 01/10/2002, effective 11/28/2008. Amendment No. 25-127.

This amendment implements two security design requirements governing transport category airplanes. This amendment requires a means to protect the flightdeck from unauthorized intrusion and small arms fire or fragmentation devices. The FAA is also requiring that certain airplanes operating in part 121 service comply with this amendment to prevent unauthorized access to the flightdeck. These amendments are being adopted to further enhance air carrier security in response to the heightened threat to U.S. civil aviation.

Policy and Advisory Circulars (ACs)

The following final and draft ACs and Policies have been issued since the last issue of the *Transport Certification Update*. For full text of final policies and ACs, and draft policies, see: http://rgl.faa.gov/. For full text of draft policies, see http://www.faa.gov/aircraft/draft_docs.

Part 25 Final Policies issued:

Policy Statement on Access to and Opening of Type III and IV Exits on Airplanes with Passenger Seating Capacities of 19 or Fewer.

ANM-115-08-02, issued 11/19/2008. This policy statement provides guidance on the access and openability requirements of §§ 25.809 and 25.813(c)(2)(ii) for Type III and IV exits on transport category airplanes with 19 or fewer passenger seats.

Part 25 Final ACs issued:

AC 20-141A, Airworthiness and Operational Approval of Digital Flight Data Recorder Systems. Issued 12/08/2008. Provides information on certification (design and installation) and continued airworthiness of digital flight data recorder systems.

The following ACs set forth security-related considerations in the design and operation of transport category airplanes:

AC 25.795-1A, Flight Deck Intrusion Resistance. Issued 10/24/2008. Refers to the ability to resist forced entry.

AC 25.795-2A, Flight Deck Penetration Resistance. Issued 10/24/2008. Refers to the ability to resist ballistic threats.

AC 25.795-3 , Flight Deck Protection (Smoke and Fumes). Issued 10/24/2008. Refers to designs to limit the entry of smoke, fumes, and noxious gases into the flightdeck in the event of detonation of an explosive or incendiary device on the airplane.

AC 25.795-4 , Passenger Cabin Smoke Protection. Issued 10/24/2008. Refers to designs to prevent passengers from being incapacitated by smoke, fumes, and noxious gases that result from detonation of an explosive or incendiary device during flight.

AC 25.795-5, Cargo Compartment Fire Suppression. Issued 10/24/2008. Refers to designs to withstand a sudden and extensive explosion and fire, such as could be caused by an explosive or incendiary device.

Part 25 Draft Policies issued:

Policy on Issuance of Special Conditions and Exemptions Related to Lightning Protection of Fuel Tank Structure.

ANM-112-08-002, Comment period closed 2/13/2009. This memo provides FAA policy on the fuel tank provisions of § 25.981(a)(3), as amended by amendment 25-102, for lightning protection of fuel tank structure. It provides the considerations under which

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special conditions or exemptions should be applied, and the alternative requirements that will be applied in lieu of § 25.981 (a)(3) when special conditions or exemptions are used. This policy memo also discusses the conditions under which the exception provision of § 21.101 will be used for type design changes to allow application of § 25.981(a) at an amendment level earlier than amendment 25-102.

Part 25 Draft ACs issued:

None in the last six months. ❖

If you have questions or comments about the Regulatory Radar, please email us at: 9-ANM-TAD-Update@faa.gov

We welcome comments and questions

We might edit letters for style and/or length. If we have more than one letter on the same topic, we will select one representative letter to publish. Because of our publishing schedules, responses might not appear for several issues. We do not print anonymous letters, but we do withhold names or send personal replies upon request. Send letters to the address to the right or email to: 9-ANM-TAD-Update@faa.gov.

NOTE: The links in the *Transport Certification Update* are current at the time of publication, but they are subject to change at any time. The target documents may be moved to another location, or the links may not remain active due to other factors beyond our control. We regret any inconvenience this may cause.

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Transport Airplane Directorate,
1601 Lind Avenue SW,
Renton, WA 98057-3356

Produced by:
Airworthiness and Technical Communications Branch, ANM-114,
Transport Airplane Directorate

Editor-in-chief: Jill Byington
Email: 9-ANM-TAD-Update@faa.gov
Phone: 425-227-1047

Contributing writers: Jill Byington, Daniel Kutz, Marcia Walters, Glen Young

Editors: Wendy Hodson, Annette Kovite, Jim Lovendahl, Rose Opland, Andrea Zachary

On the Cover

According to the Lessons Learned from Transport Category Airplane Accidents web site, "Collisions between airplanes and birds have occurred from nearly the beginning of aviation." A bird strike to an engine, like the engine on the Airbus wing shown on our cover, can be catastrophic. Initial speculation regarding what recently brought down an Airbus A320 airplane on the Hudson river centered on a bird strike to the engines.

You can also read our story about the Lessons Learned from Transport Airplane Accidents web site (page 3). The "Accident Threat Categories" section of that site includes findings and lessons related to past accidents caused by bird strikes.