



Aviation Safety and Aircraft Certification

Airworthiness Directives

Presented to: University of Washington

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**Federal Aviation
Administration**



Agenda

- **FAA Overview**
- **Airworthiness Life Cycle**
- **Airworthiness Directives**
- **Alternative Methods of Compliance**
- **Resources**
- **Summary**
- **Questions**



FAA Role

- **FAA oversees: aircraft design, manufacturing, operators, airports, air traffic, pilots, etc.**
- **FAA responsibilities include aircraft design certification and continued operational safety of aircraft in-service**



FAA Organization

- **FAA part of Department of Transportation within the Executive Branch**
- **FAA Headquarters in Washington D.C.**
 - Aviation Safety
 - Aircraft Certification Service – Design & Production Approval
 - Transport Airplane Directorate in Seattle, WA
 - » Seattle Aircraft Certification Office
 - Small Airplane Directorate in Kansas City, MO
 - Rotorcraft Directorate in Fort Worth, TX
 - Engine & Propeller Directorate in Boston, MA
 - Office of Accident Investigation
 - Office of Rulemaking
 - Flight Standards – Operational approvals



Aircraft Certification Service Functions

- Design Approvals
(engineering design)
- Production Approvals
(manufacturing)
- Continued Operational Safety
(in-service monitoring &
correction if necessary)

Safety Regulations

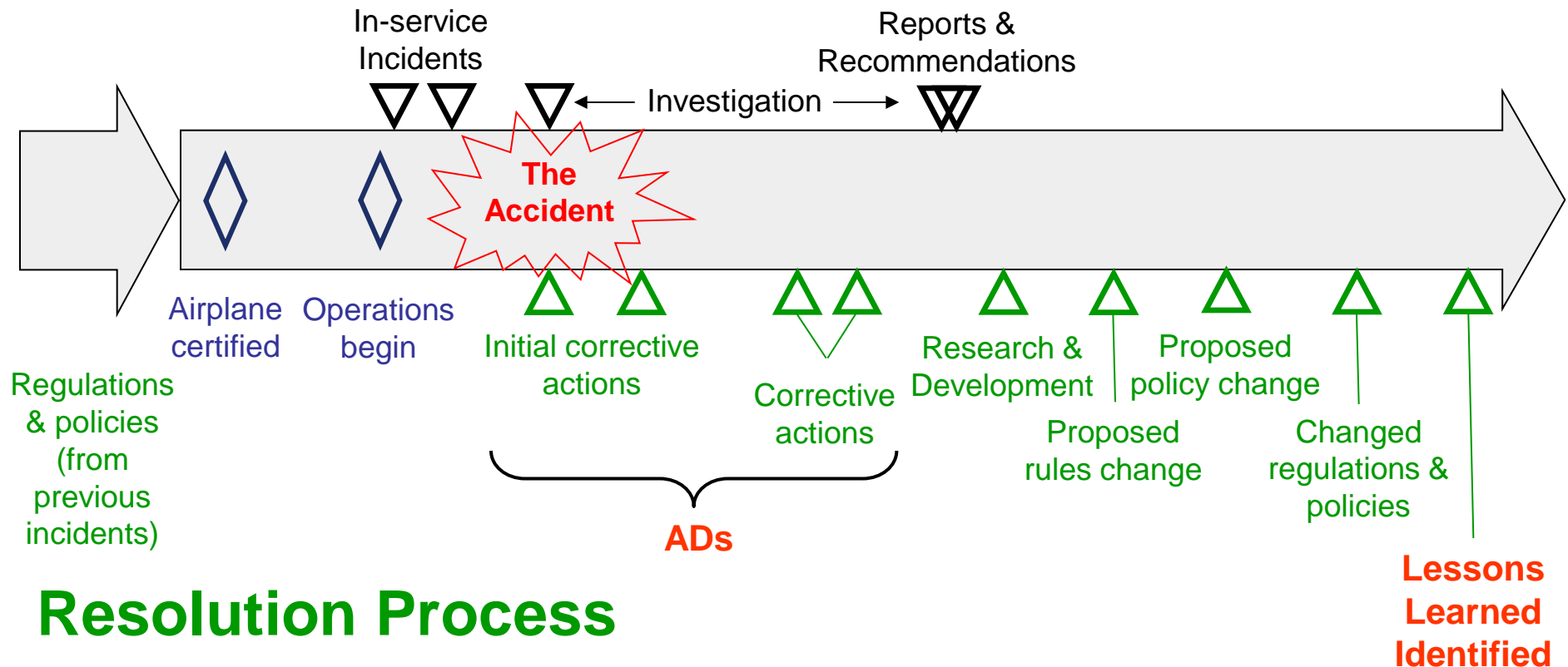


- Aircraft design & technology have evolved
- FAA regulations change with time via amendments to the rules
- In-service fleet experience can lead to amendments



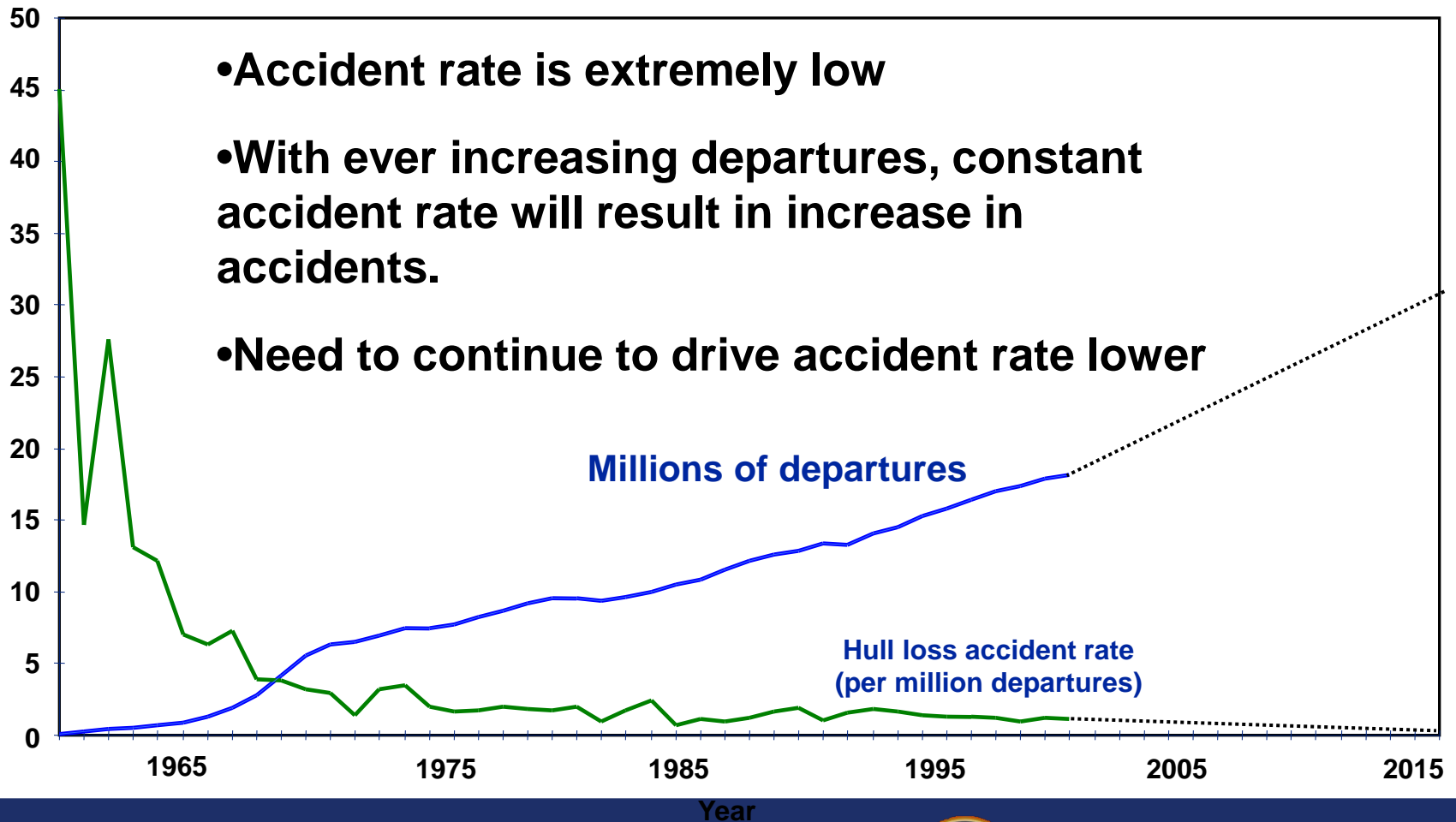
Airworthiness Life Cycle

Investigation Process



Resolution Process

Need to Continuously Improve Safety



Lessons Learned

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Lessons Learned From Transport Airplane Accidents










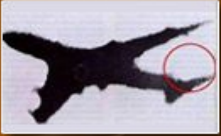


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Welcome to Lessons Learned From Transport Airplane Accidents

International commercial air travel has reached levels of safety and convenience which would have been unimaginable just a generation ago. This has not been the result of a single action or single contribution, but rather a combined worldwide effort of many individuals and organizations working together for a common goal. In the area of aviation safety, these efforts have often been the result of a recognition that there were opportunities for improvements to processes, requirements, or procedures related to safety. Aviation accidents, while almost always extremely tragic, have played an important role in this continued safety improvement process.

This Lessons Learned From Transport Airplane Accidents Library is intended to provide information in order to aid in the continual improvement of the safety of commercial air travel. This initial material represents some of the most major accidents which have shaped the current air travel system. The U. S. Federal Aviation Administration, with support from many other organizations, both government and industry, plan to continue adding to this library on an annual basis. The objective is to populate the material with many more of the most historically significant, policy shaping accidents, in order that the lessons that can be learned from their review may be available for all users.

Airplane Life Cycle	Accident Threat Categories	Accident Common Themes
   	   	   

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Airworthiness Directives (ADs)

- ADs are laws written to address unsafe conditions
- Part 39 of Title 14 of Code of Federal Regulations (CFR) provides legal framework
- New ADs are amendments to Part 39

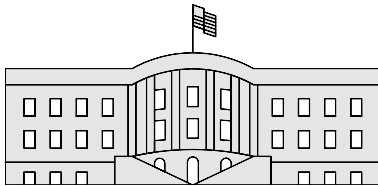
3 Branches of Government



Legislative



Makes the law



Executive



Carries out the law



Judicial



Interprets the law

Some Regulatory Agencies (like the FAA)

**Are part of the Executive Branch,
but are “hybrids”:**

Executive Branch law-makers

Administrative Procedure Act (APA)

Requires “notice and comment”

- Notify the public of what we want to require
- Reasonably respond to comments
- Preamble, “scope,” clarity, enforceability

Limited Exceptions to APA

- **“Unnecessary” to give notice: clerical, nonsubstantive**
- **“Impracticable” to give notice: time for notice would defeat purpose of rule**
- **“Contrary to the public interest” to give notice: not clearly defined by case law**

ADs Are Unique Rules

- **Typically not subject to review by:**
 - Office of Management and Budget (OMB)
 - Exception would be due to extremely high cost
 - Department of Transportation (DOT)
- **Subject of increasing public interest**
- **Process must be “above suspicion”**

AD Categories

- **Emergency AD:**

- Critical safety risk
- Compliance time = 14 days or less
- Distributed by e-mail (or FAX)(originally sent as telegram)
- Can include repetitive inspections of same type as initial with longer compliance time
- Federal Register Version issued within 30 days

AD Categories

- **Immediately Adopted Rule:**

- Less critical safety risk
- Compliance time = 30-90 days
- Published in the Federal Register
- Can include repetitive inspections of same type as initial with longer compliance time
- Must show good cause for no notice/public comment
- Effective date is 15 days after publication in Federal Register

AD Categories

- **NPRM:**
 - Least critical safety risk
 - Compliance time unlimited (normally 31 days or more)
 - Published in Federal Register
 - Comment period = 45 days
 - Followed up with Final Rule after NPRM
 - Effective date is 35 days after publication in Federal Register

AD Categories

- **No Notice Final Rule:**
 - Issued for products with U.S. Type Certificate
 - Issued when no airplanes on U.S. Register
 - Effective 15 days after publication in Federal Register

Public Comments

- **Comments received to NPRMs**
 - Comments are summarized and FAA disposition is provided in the final rule
 - May necessitate a change to the rulemaking, most commonly a Supplemental NPRM



Public Comments

- **Comments received to IARs after publication**
 - If necessary, FAA initiates new rulemaking
 - If a significant issue (wide or continuing interest among public), but does not cause the FAA to consider changing final rule AD
 - A disposition of the comment published in the Federal Register

AD changes

- **Withdrawal of NPRM**
- **Supplemental NPRM ***
- **Rescission AD**
- **Revision AD**
- **Correction AD**
- **Supersedure AD ***

*** Most common**

Supplemental NPRM

- **Expands scope of NPRM prior to issuance of Final Rule**
- **Examples:**
 - Adding new requirement(s)
 - Expanding applicability of AD
 - Adding terminating action
 - Reducing compliance time(s)

Supersedure AD

- **Adds new requirement(s) to existing AD**
- **Examples:**
 - Expanding applicability
 - Reducing compliance time
 - Adding inspection(s)
 - Adding mandatory terminating action
 - Making substantive correction (possible for operators to comply--part exists)

Alternative Method of Compliance (AMOC)

FAA Order 8110.103A Chg 1, effective 6/30/2011

- **An AMOC is a different way, other than the one specified in an AD, to address the unsafe condition on an aircraft, aircraft engine, propeller or appliance.**
- **An AMOC must ensure the unsafe condition is corrected by providing an acceptable level of safety.**

Resources

- **FAA Website:**
 - <http://www.faa.gov>
- **Regulatory and Guidance (RGL) Website with Regulations, ADs, Orders, etc. :**
 - <http://rgl.faa.gov/>
- **Web-based Lessons Learned**
 - <http://lessonslearned.faa.gov/>

Summary

- **ADs are laws written by the FAA**
- **ADs written for unsafe conditions**
- **A range of AD types can be written, depending on urgency**
- **NPRMs and ADs are available online**
- **AMOC approval allows deviation from AD requirement**

Questions

- **Thank You!**
- **Questions?**

