

NTSB Structural Integrity Forum

Panel 5: Continued Airworthiness

14 CFR 21.3 Notification and FAA Airworthiness Directive Process

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Overview

- **Reporting Requirements for Failures, Malfunctions and Defects—14 CFR 21.3**
- **Safety Review Process – Monitor Safety, Analyze Data (MSAD)**
- **Airworthiness Directive (AD) Process**



14 CFR 21.3 Reporting - Who

- **14 CFR 21.3(a)(b) Reporting Requirements:**
“...the holder of a Type Certificate... shall report any failure, malfunction or defect in any product, part, process or article manufactured by it that it determines has resulted [or could result] in any of the occurrences listed in paragraph (c) of this section.”
- **14 CFR 21.3(d)(2) exempts aircraft manufactured in foreign countries which have a bilateral agreement with the US and have a US type certificate. For example Airbus, Bombardier, and Embraer.**



14 CFR 21.3 Reporting – Where & When

- **14 CFR 21.3(e)** Each report required by this section—
 - **Must be made to the Aircraft Certification Office in the region in which the Type Certificate holder is located**
 - **Must be made within 24 hours after it has determined that the failure, malfunction, or defect has occurred.**



14 CFR 21.3 Reporting - What

- **14 CFR 21.3(c) The following occurrences must be reported ... :**
 - A significant aircraft primary structural defect or failure caused by any autogenous condition (fatigue, under strength, corrosion, etc.).
 - Any abnormal vibration or buffeting caused by a structural or system malfunction, defect, or failure.
 - Any structural or flight control system malfunction, defect, or failure which causes an interference with normal control of the aircraft or which derogates the flying qualities.



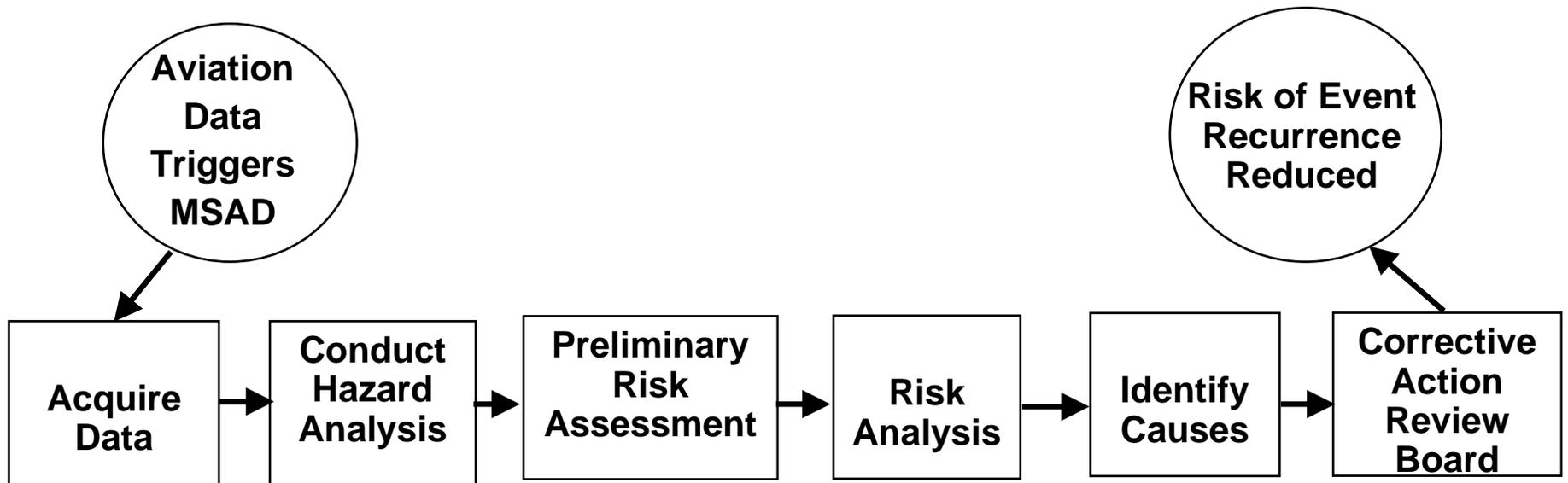
14 CFR 21.3 Reporting - How

- **FAA-Boeing Working Agreements on Continued Operational Safety**
 - Defines process for reporting, analyzing, identifying and resolving safety events and issues
 - Includes a process for submitting initial reportable items. This process is an acceptable method of compliance with 14 CFR 21.3
 - Results in reporting of a broader scope of occurrences than required by 14 CFR 21.3



Safety Review Process

Monitor Safety Analyze Data (MSAD)



- SDRs
- 21.3 Reports
- FAA SR
- NTSB SR
- FAA Inspector
- Operator Input
- Audit Results

Automated filtering process

Qualitative assessment by experienced engineers

Quantitative risk analysis to determine safety issue

Identify causes and candidate corrective actions

Evaluate candidate corrective actions and decide on appropriate action



Airworthiness Directive (AD) Process

- **What is an Airworthiness Directive (AD)**
 - FAA is given broad authority under Title 49 to enact rulemaking to set standards and mandate corrective actions
 - AD is a new regulation
 - Must comply with Administrative Procedures Act
 - Public notice– A statement of what is proposed and why
 - Public given an opportunity to comment
 - Publication in the Federal Register
 - Good Cause of Exceptions
- **When does the FAA issue an AD (14 CFR 39.5)**
 - An unsafe condition exists in the product; and
 - The condition is likely to exist or develop in other products of the same type design.



Airworthiness Directive (AD) Process

- Types of ADs
 - Notice of Proposed Rulemaking (NPRM)
 - Immediate Adopted Rule AD
 - Emergency AD
- ADs on Foreign Manufactured Aircraft
 - Foreign Authority issues mandatory continuing airworthiness information (MCAI) to address an unsafe condition
 - FAA reviews MCAI and makes an independent determination of whether an unsafe condition exists
 - FAA can issue an AD to mandate the MCAI or take independent action



Summary

- **Aircraft manufacturers are required to notify the airworthiness authority for the state of design of failures, malfunctions and defects**
- **The FAA has a process for receiving reports, analyzing the data, identifying safety issues and corrective actions**
- **The FAA uses the AD process to mandate corrective action**

