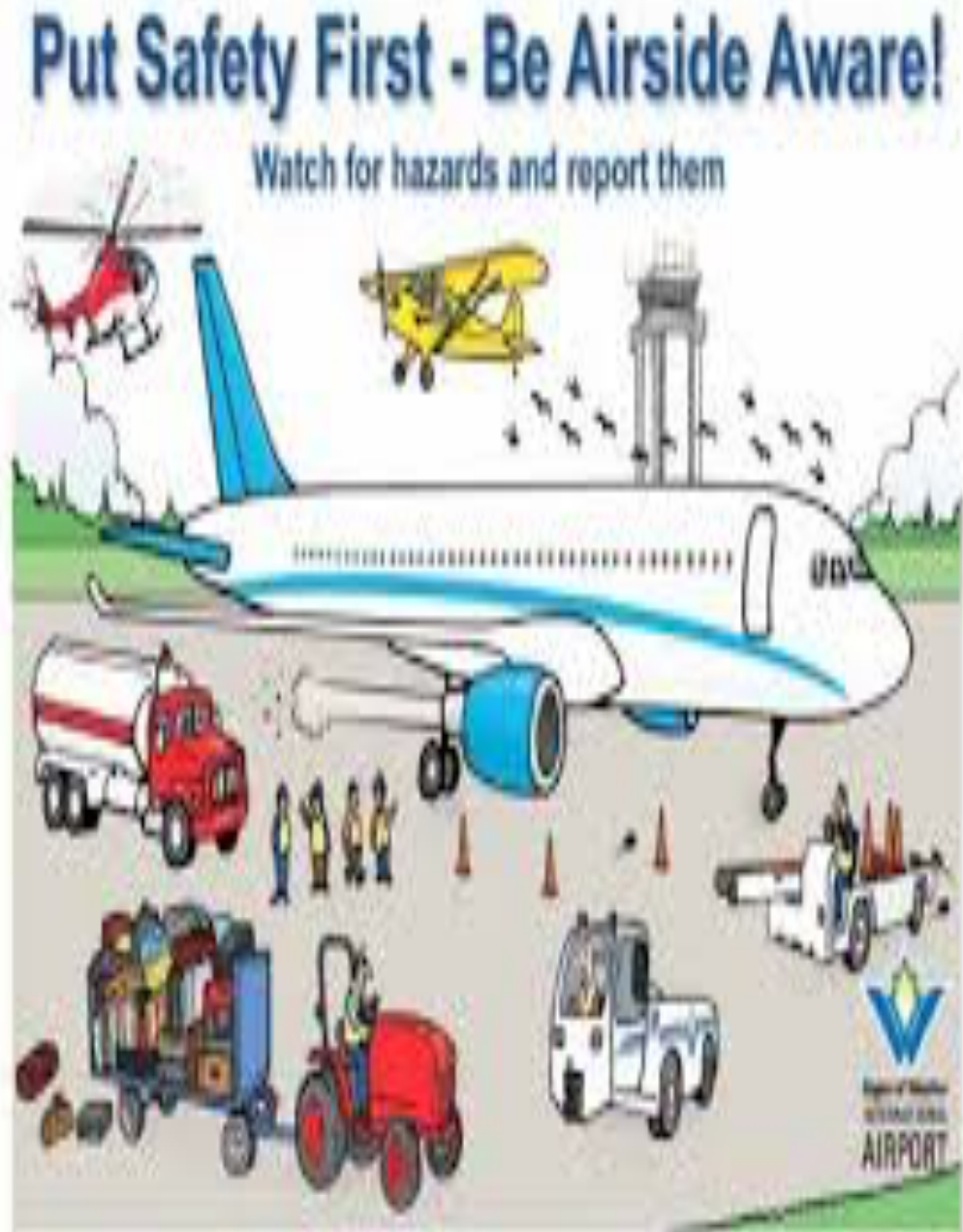


UNIT 2

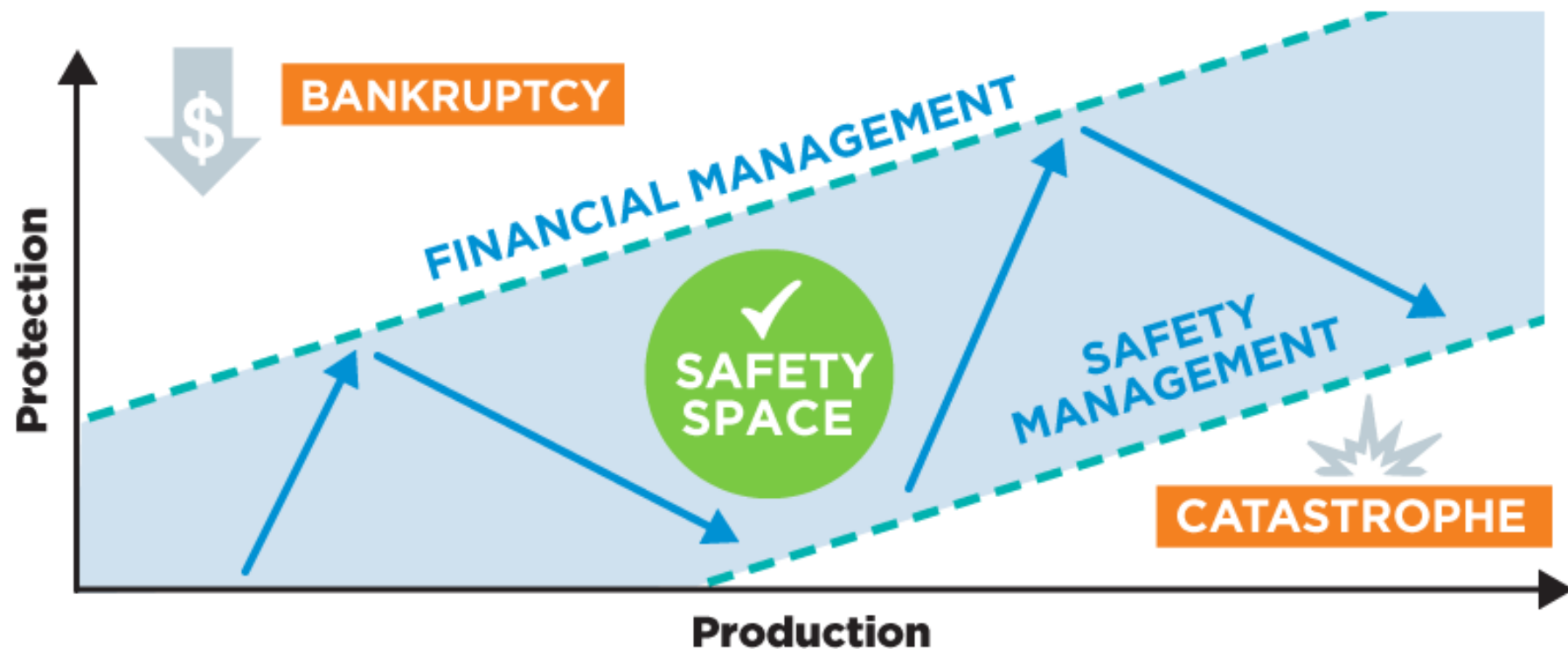
ANNEX 19



Course Objective

- To understand aviation safety dilemma
- To understand Annex 19 Concept
- Able to explain service provider in Aviation

The Management Dilemma



Aviation safety Dilemma

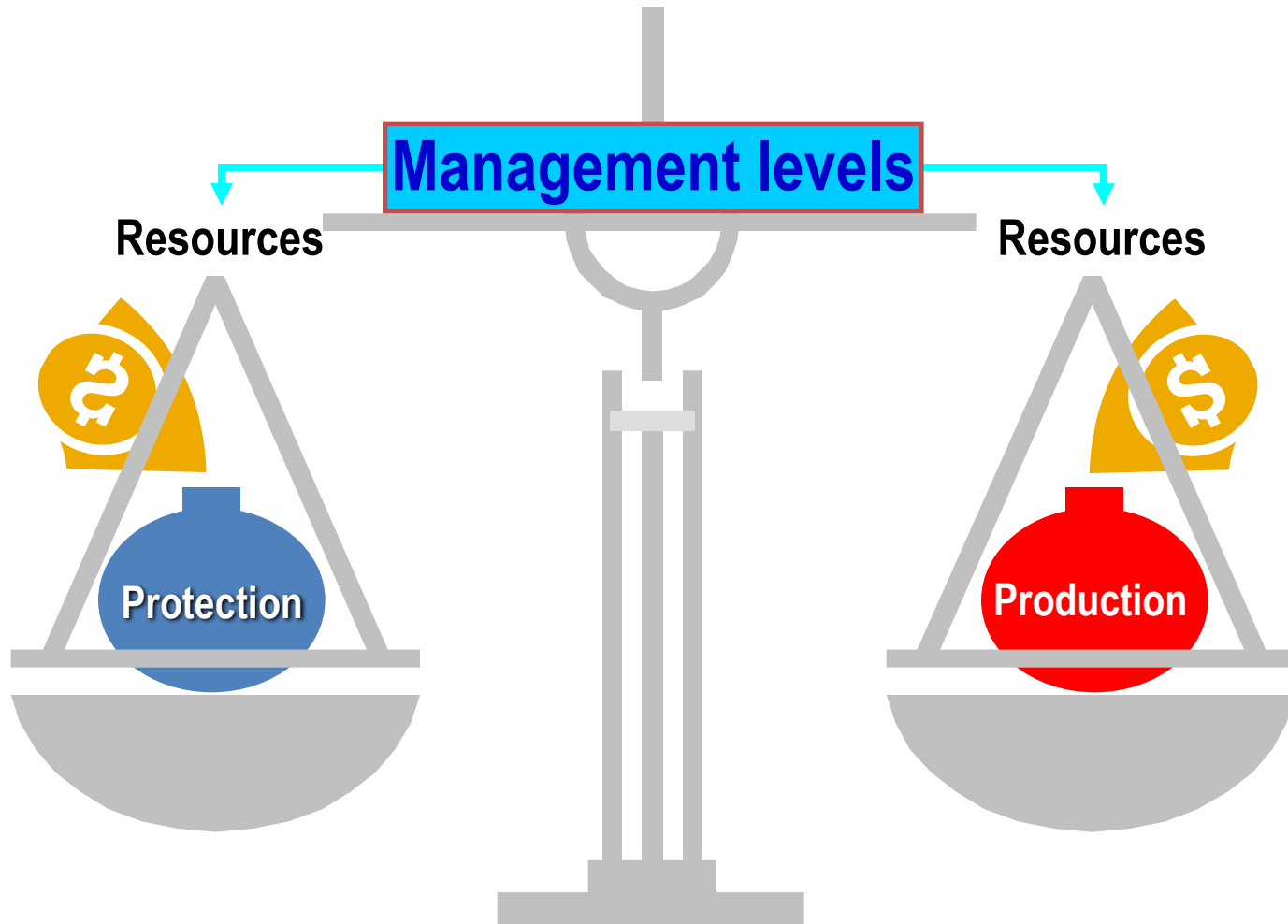
Management have to conduct a careful balancing act between protection and commercial production.

To much focus on protection can limit the operation to the point of bankruptcy.

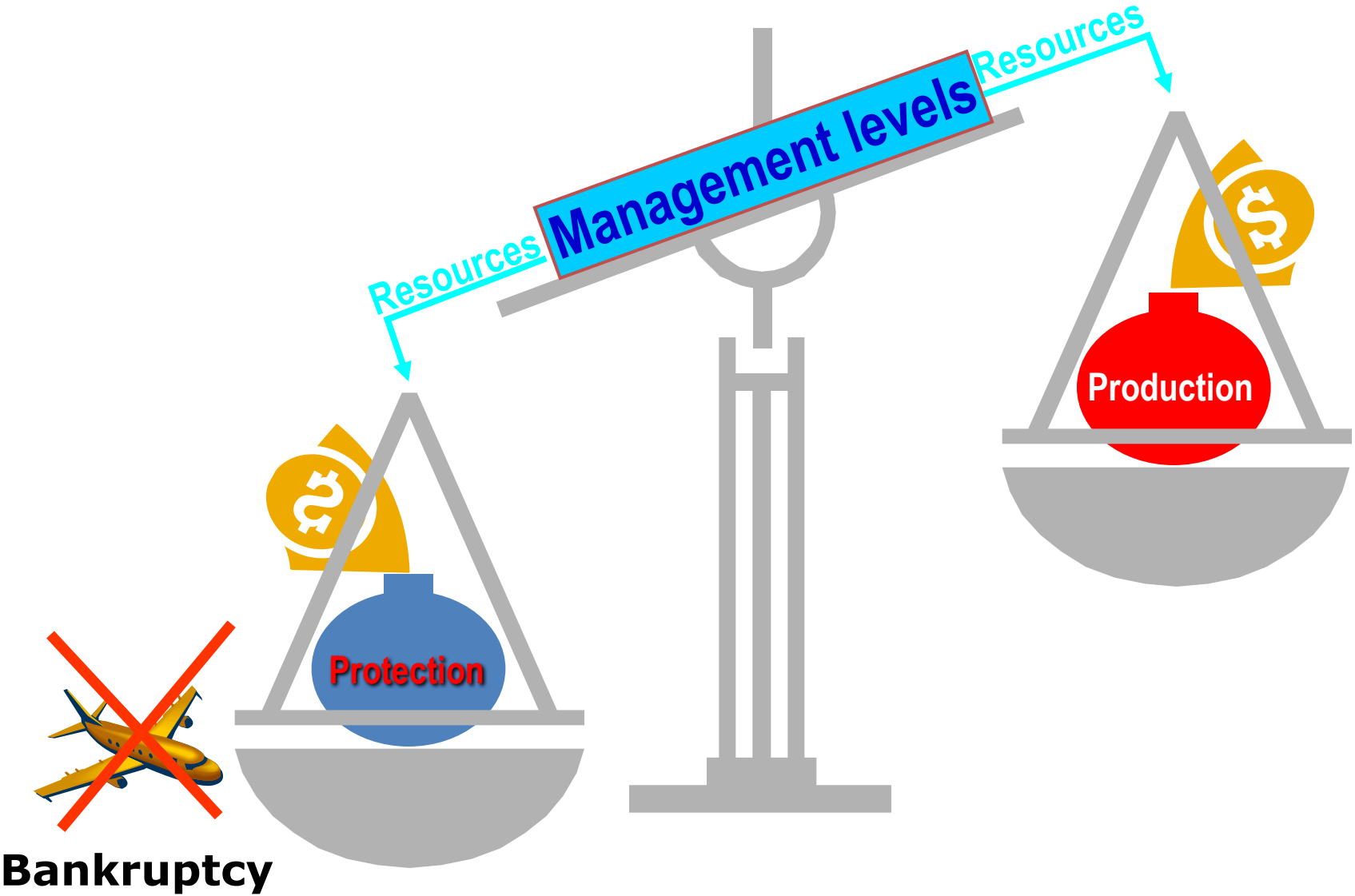
Overstretching limited resources to achieve high levels of production can cause mistakes and errors which may lead to serious incidents.

By carefully balancing financial and safety management, managers can confine their operation within the "Safety Space".

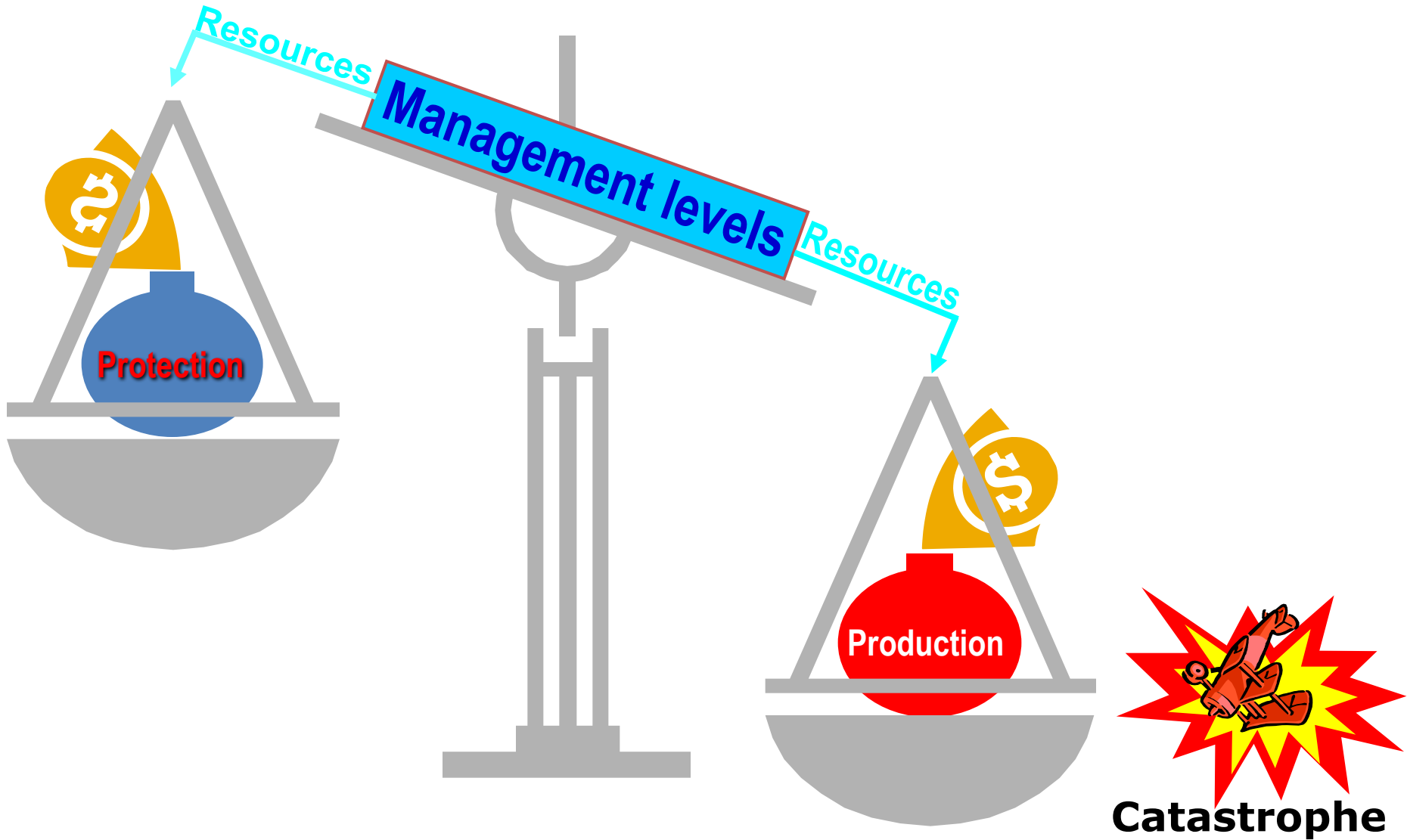
The management Safety dilemma



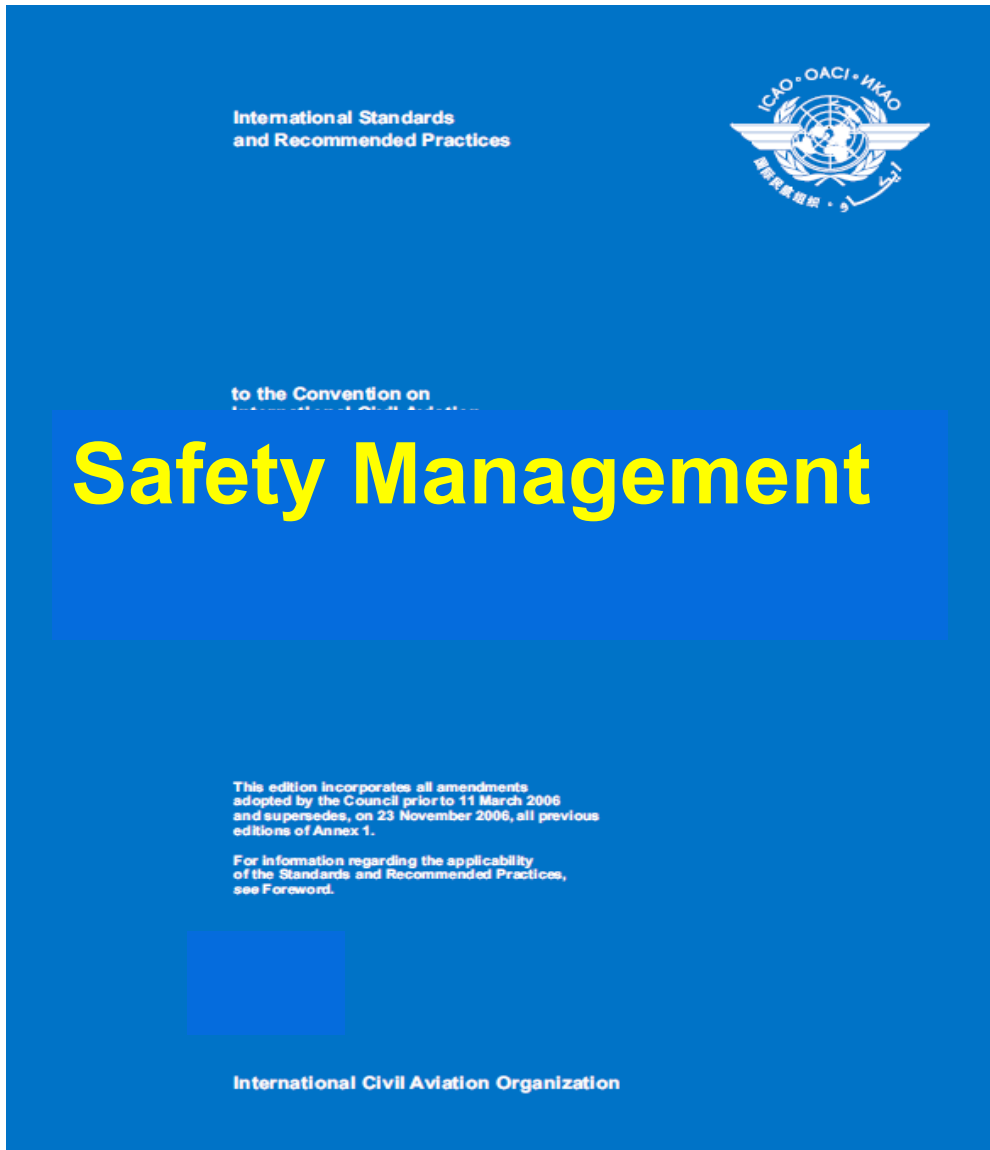
The management dilemma



The management dilemma



What is ICAO Annex 19?



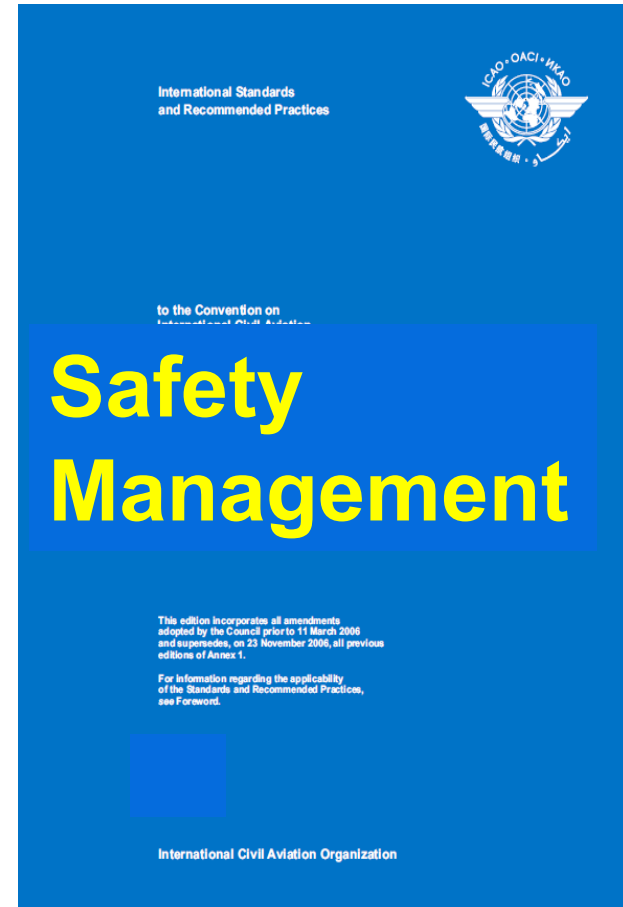
ANNEX 1	Personnel Licensing
ANNEX 2	Rules of the Air
ANNEX 3	Meteorological Service for International Air Navigation
ANNEX 4	Aeronautical Charts
ANNEX 5	Units of Measurement to be Used in Air and Ground Operations
ANNEX 6	Operation of Aircraft
ANNEX 7	Aircraft Nationality and Registration Marks
ANNEX 8	Airworthiness of Aircraft
ANNEX 9	Facilitation
ANNEX 10	Aeronautical Telecommunications
ANNEX 11	Air Traffic Services
ANNEX 12	Search and Rescue
ANNEX 13	Aircraft Accident and Incident Investigation
ANNEX 14	Aerodromes
ANNEX 15	Aeronautical Information Services
ANNEX 16	Environmental Protection
ANNEX 17	Security: Safeguarding International Civil Aviation Against Acts of Unlawful Interference
ANNEX 18	The Safe Transport of Dangerous Goods by Air
ANNEX 19	Safety Management

- **Annex 1** - Personnel Licensing
- **Annex 2** - Rules of the Air
- **Annex 3** - Meteorological Services
- **Annex 4** - Aeronautical Charts
- **Annex 5** - Units of Measurement
- **Annex 6** - Operation of Aircraft
- **Annex 7** - Aircraft Nationality and Registration Marks
- **Annex 8** - Airworthiness of Aircraft
- **Annex 9** - Facilitation



- **Annex 10 – Aeronautical Telecommunications**
- **Annex 11 - Air Traffic Services**
- **Annex 12 - Search and Rescue**
- **Annex 13 - Aircraft Accident and Incident Investigation**
- **Annex 14 - Aerodromes**
- **Annex 15 - Aeronautical Information Services**
- **Annex 16 - Environmental Protection**
- **Annex 17 - Security**
- **Annex 18 - The Safe Transportation of Dangerous Goods by Air**

- **Annex 1: Personnel Licensing** →
- **Annex 6 - Operation of Aircraft** →
- **Annex 8 - Airworthiness of Aircraft** →
- **Annex 11 - Air Traffic Services** →
- **Annex 13 - Aircraft Accident and Incident Investigation** →
- **Annex 14 - Aerodromes** →



ANNEX 19

The first edition of Annex 19 was adopted by the Council on 25 February 2013 and becomes applicable on 14 November 2013.

The provisions in this Annex have been developed in response to the recommendations provided

- **The Directors General of Civil Aviation Conference** on a Global Strategy for Aviation Safety (Montréal, 20 to 22 March 2006) (DGCA/06)
- **The High-level Safety Conference** (Montréal, 29 March to 1 April 2010) (HLSC/2010) regarding the need for an Annex dedicated to safety management.

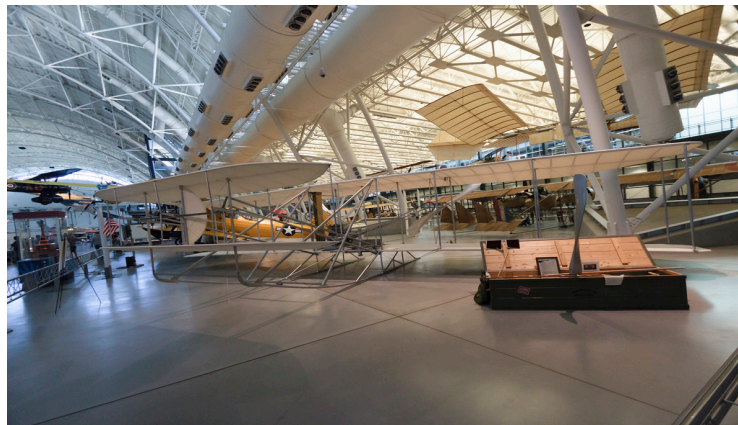
The Conference concluded that safety management processes **under the direct responsibility of States** that are critical to civil aviation safety should be contained in a single Annex:

- Including the State Safety Programme (SSP) framework and the 8 critical elements of a safety oversight system;
- Covering general and business aviation activities; and
- Retaining the safety management system (SMS) requirements specific to one area of activities in individual Annexes.

- ICAO SARPS ([Standards and Recommended Practices](#)) for each area of ICAO responsibility are contained in 19 Annexes.
- Each Annex deals with a particular subject area.
- All are subject to regular amendment and the detail in respect of many of them is contained in publications in the numbered ICAO Document Series

The Standards and Recommended Practices (SARPs) contained in this Annex shall be applied to safety management functions related to, or in direct support of, the safe operation of aircraft.

Which would address the safety management responsibilities of States framed under **the State Safety Program (SSP)**.



As part of the ICAO requirements in these annexes service providers must implement an SMS that is accepted by their state. (annex 19 chpt.4)

Service providers includes :

- Approved training organizations
- Aircraft operators, maintenance organizations
- Air traffic providers
- Certified aerodrome operators
- Organization responsible for type design and/or manufacturer a/c

- **Approved training organizations** in accordance with Annex 1 that are exposed to safety risks related to aircraft operations during the provision of their services;
- **Operators of aero planes or helicopters** authorized to conduct international commercial air transport / CAT (Annex 6, Part I or Part III, Section II);

- **Approved maintenance organizations** providing services to operators of aeroplanes or helicopters engaged in international CAT (Annex 6, Part I or Part III, Section II);
- Organizations responsible for the type design or **manufacture of aircraft**, in accordance with Annex 8;
- **Air traffic services** providers in accordance with Annex 11; and

- Operators of certified aerodromes in accordance with Annex 14.
- International general aviation operators of large or turbojet aeroplanes in accordance with Annex 6 Part II Section III.

Content of Annex 19

In response to the HLSC 2010 (High Level Safety Conference). The ICAO recommended that the new Annex be developed in two phases:

- **Phase 1** involved the consolidation of existing safety management provisions previously contained in as many as 6 different Annexes, into a single new Annex.
- **Phase 2** The development of enhanced requirements which started in November 2012.



- CHAPTER 1 – Definitions
- CHAPTER 2 – Applicability
- CHAPTER 3 – State safety management responsibilities
- CHAPTER 4 – Safety management system (SMS)
- CHAPTER 5 – Safety data collection, analysis and exchange
- APPENDIX 1 – State safety oversight system
- APPENDIX 2 – SMS Framework
- ATTACHMENT A – SSP Framework
- ATTACHMENT B – Legal guidance for the protection of information from safety data collection and processing systems

Chapter1 Definition

- **Duplicated:** *Accident, Aero plane, Aircraft, Helicopter, Incident, Industry code of practice, Serious injury, State of Design, State of Manufacturer and State of the Operator*
- **Slightly modified:** *Incident, safety management system, State safety programmed, operational personnel*
- **New definitions:** *Safety, Safety performance, Safety performance indicator, Safety performance target and Safety risk*

Chapter 2 Applicability

- **Safety management responsibilities of Contracting States and aviation activities related to, or in direct support of, the safe operation of aircraft**

Chapter 3 - State Safety

- **Consolidates existing Standards requiring States to establish an SSP, with the addition of the SSP Framework Components**
- **Acceptable level of safety performance**
- **Requirement for the implementation of SMS by service providers and general aviation operators as part of a State's SSP**
- **SMS framework applicable to aircraft design and manufacturing organizations**
- **New requirement for States to implement safety oversight systems**

Chapter 4 - Safety Management System

- SMS implementation by **service providers** in accordance with the SMS Framework
- SMS implementation by **international general aviation operators** appropriate to the size and complexity of the operation
- SMS to be acceptable to the relevant State, identifying the State responsible for acceptance
- Sector-specific SMS provisions retained in applicable Annexes

As part of the requirements, an SMS should include :

- A process to identify safety hazards and assess the risks.**
- A process to develop and implement remedial action necessary to maintain an acceptable level of safety.**
- Provision for continuous monitoring and regular assessment of appropriateness and effectiveness of safety management activities.**

Chapter 5 - Safety Data collection

- **Transfer of provisions on safety data collection, analysis, protection and exchange from Annex 13, Chapter 8**
- **Coordination between accident investigation and safety stakeholders**
- **Accessibility to reporting systems by pertinent authorities to support safety responsibilities**
- **New requirement for the protection of safety management data**

**Appendix 1 - State Safety Oversight System
(8 critical elements of oversight)**

**Appendix 2 - Framework for a Safety
Management System (SMS): 4 components
and 12 elements**

Attachment A - Framework for a State Safety Program(SSP): 4 components and 11 elements

Attachment B - Legal Guidance for the Protection of Information from Safety Data Collection and Processing Systems

Benefit of Annex 19

- **Annex 19 highlights the importance of safety management at the State level;**
- **It facilitates the evolution of safety management provisions;**
- **It provides an opportunity to further promote the implementation of SMS and SSP provisions;**
- **It establishes a process to analyze feedback received regarding Annex 19 and safety management implementation.**
- **Having a “legal” basis in one unique document.**

Summary of Annex 19

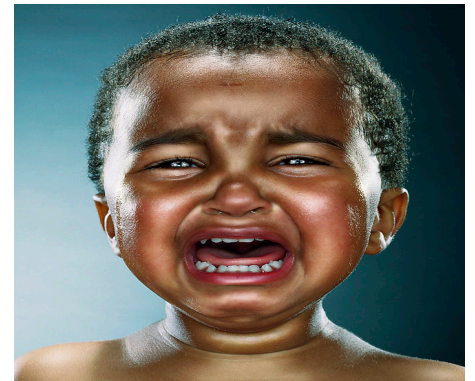
All of the safety management provisions in Annex 19 have been transferred or duplicated from safety management provisions previously contained in six other Annexes. The new provisions are as follows:

- The Safety Management System (SMS) framework now applies to organizations responsible for the type design and manufacture of aircraft
- The four existing components of the framework - Safety Policy and Objectives, Risk Management, Safety Assurance and Safety Promotion are raised to the status of Standards.

- **The State Safety Oversight System is now applicable to the oversight of all product and service providers.**
- **Safety Data Collection Analysis and Exchange becomes part of the SSP(stated safety program).**
- **The new Annex also replicates Attachment ‘E’ to Annex 14 “Legal Guidance for the Protection of Safety Information from Safety Data” as Attachment ‘B’.**

True or false?

- Annex 19 is called “risk management”.
- SSP is created by Service Providers.
- ICAO facilitates safety management information sharing among Service Providers within the State.
- Risk management means you can deviate to the rules if properly mitigating factors are in place.
- **All statements are false**



Case study: Concorde and safety culture (1)

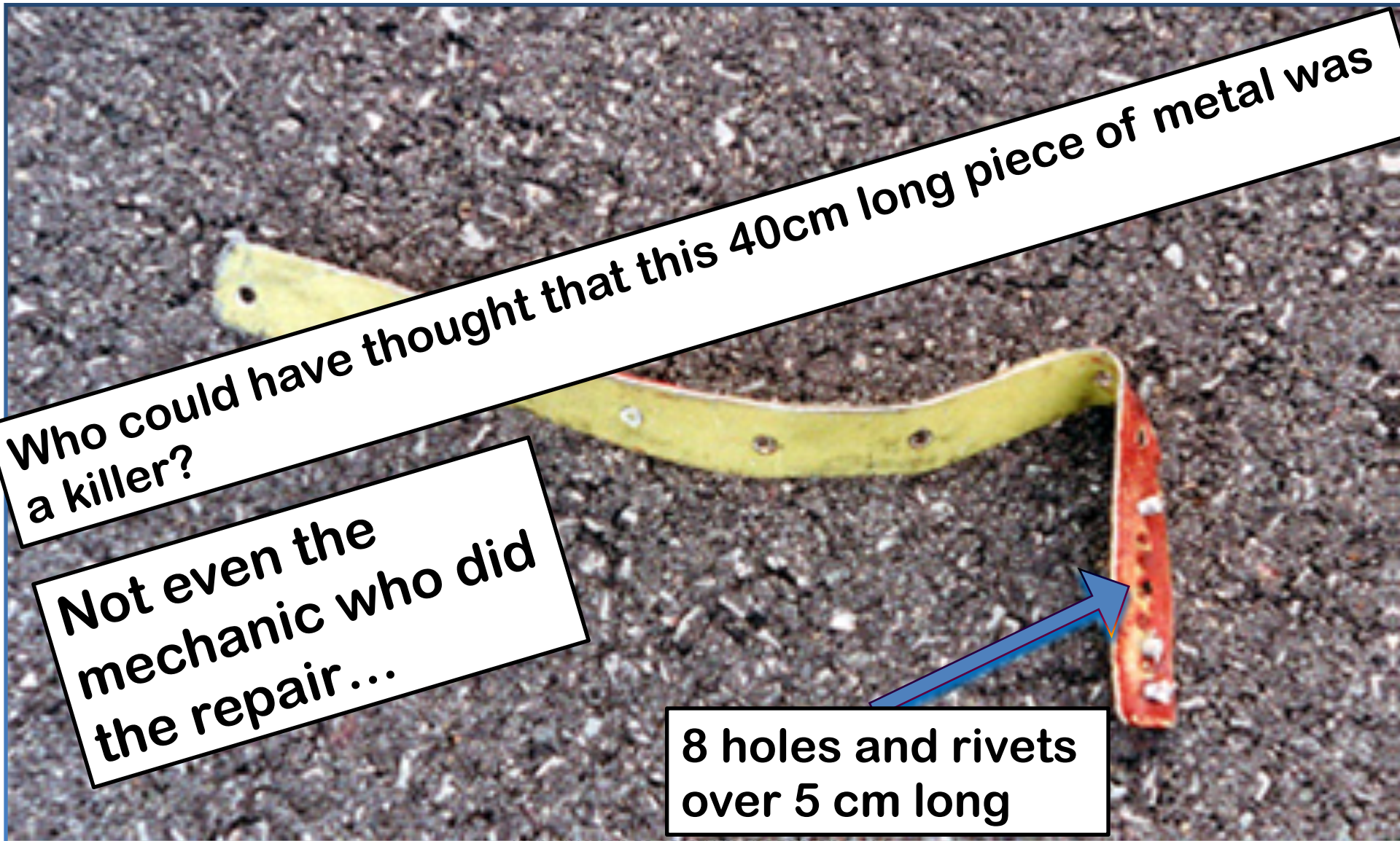
**Concorde F-BTSC accident, 25 July 2000,
France**

- **109 casualties, a/c destroyed**
- **Source: final investigation report, available at**
<http://www.bea.aero/docspa/2000/f-sc000725a/htm/f-sc000725a.html>

•The French BEA concluded in 2002 that a wear strip of metal, fallen off from a DC-10 that took off 4 minutes earlier, had punctured a tire of the Concorde, sending shards of rubber into the fuel tanks, leading to flames pouring from its undercarriage and making the plane crashing into a hotel few kilometers away.

•The strip was attached with rivets close to other previous existing holes (reverse of the engine) and was improperly attached

Concorde and safety culture (2)



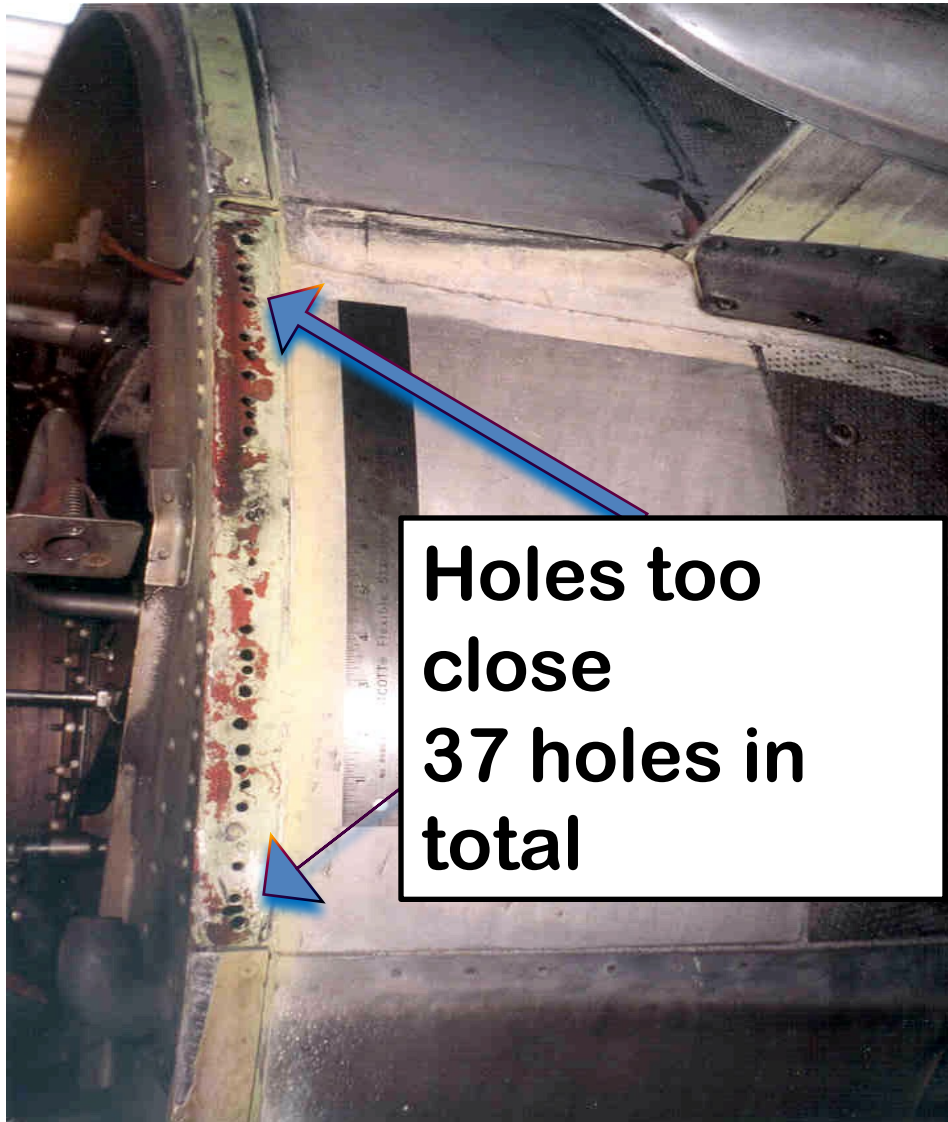


Concorde and safety culture (4)



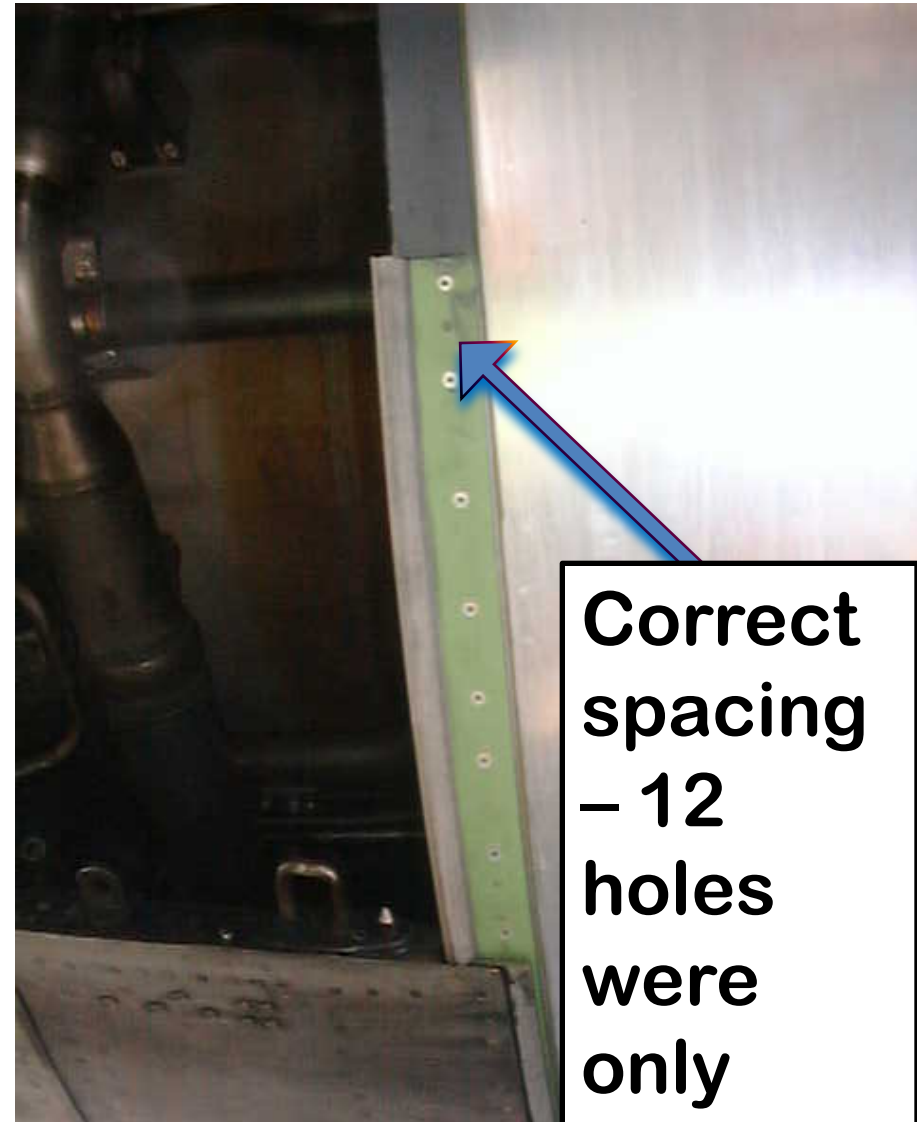
june 2012

DC10 reverse as found



**Holes too close
37 holes in total**

How it should be



**Correct spacing
- 12 holes were only allowed**

Concorde and safety culture

- The engine cowl support was drilled with 37 holes whereas the installation of the strip required only 12.
- Therefore the strip was attached with rivets close to other previous existing holes and was improperly attached, resulting in it falling onto the runway.
- The mechanic (a metal sheet worker, not a certifying staff) used titanium, rather than aluminium (higher resistance), to construct a replacement piece (deviation to the maintenance repair as prescribed by the engine manufacturer).

The mechanic who did the repair and the certifying staff who released to service the aircraft were charged with negligence (just culture).

This part had been replaced during a C check 6 weeks before the accident took place.

3 weeks after the C check, the part detached again and was replaced by another part (the one fell off on 25 July 2000).

These signals should have alerted the maintenance organization that improper maintenance had been carried out and that the trouble shooting was poor. The organisation was charged with negligence.

Reference

https://www.icao.int/SAM/Documents/2014-SSPFLTDATA/5_lima%20Annex%2019%20rev%201.pdf

<http://www.caa.co.za/SMS%20Newsletters/January%202015.pdf>