SINDICATO ESPAÑOL DE PILOTOS

SEPLA

DE LINEAS AÉREAS

Just Culture within the airlines
The role of the expert experience

Just Culture within the airlines

Juan Carlos Lozano:

- Airline Transport Pilot (+10000 hours)
- Airbus A340/A330 type rated
- +4500 flight hours in MD80 series
- IFALPA Accredited Accident Investigator
- EUROCONTROL Expert Course
- Lead investigator at SEPLA (2006-2014)

The role of experts (in a real case)

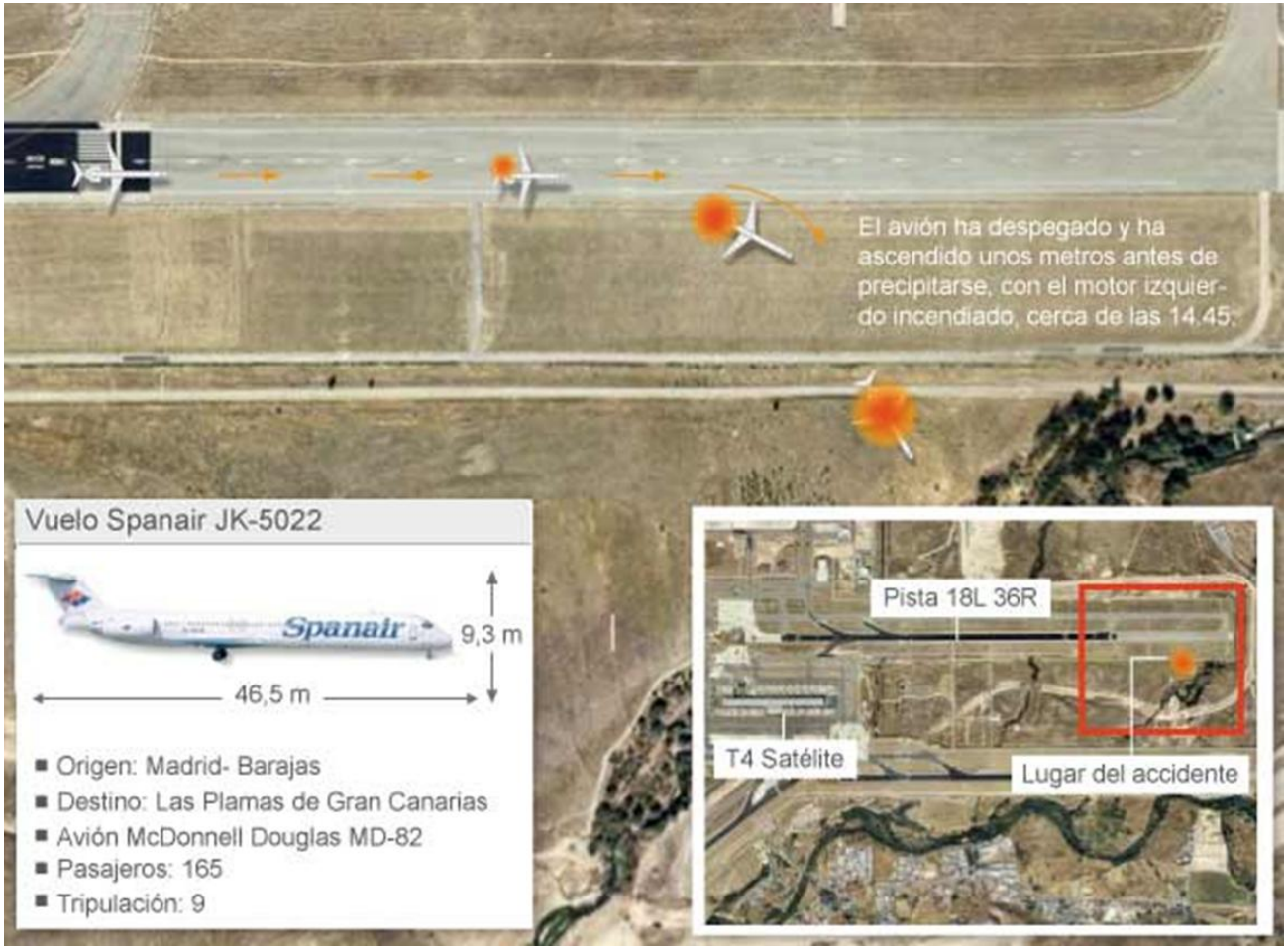
MD-82 at Madrid-Barajas Airport – August 20th, 2008

The accident

Brief history of the accident

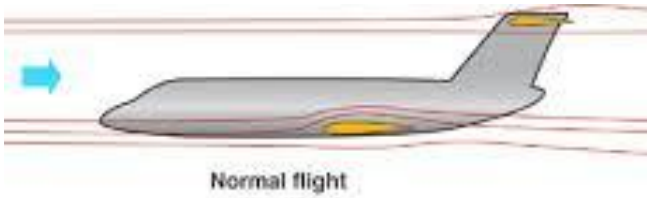
- Before take-off the pilots detected an abnormal outside air temperature (OAT) indication
- Aircraft returned to parking for maintenance checks
- Maintenance staff took action by cooling the temperature probe and they disconnect the probe heating system
- The aircraft was dispatched with an inoperative item – "under MEL"
- In the subsequent take-off attempt the crew lost control of the aircraft (no flaps, no slats)

Accident description

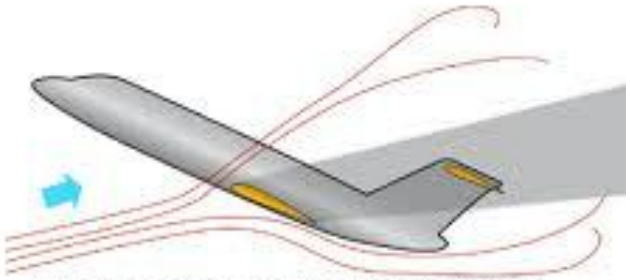



Any conclusions based on this animation should be thoroughly reviewed in light of the manner in which it was produced.
This animation does not depict weather.
CIAIAC
Flightscape
ap Position: 0 deg
il Wind: -0 Kts
ertical G: 0.98 g Peak 0.96 g
DRAF
ALT
VERTICAL SPEED
1000 FPM
EPR
ENG
EGT
DME1
DME2
Not Recorde
- Control Colu
- Control Whe
- Flap Handle

Flaps & slats



Normal flight



Deep Stall condition - T-tail in "shadow" of wing

RAT probe heating

- RAT = *Ram Air Temperature*
- Heated <u>only during flight</u>
- Temperature data are used for:
  - Engine settings
  - Anti-ice detection

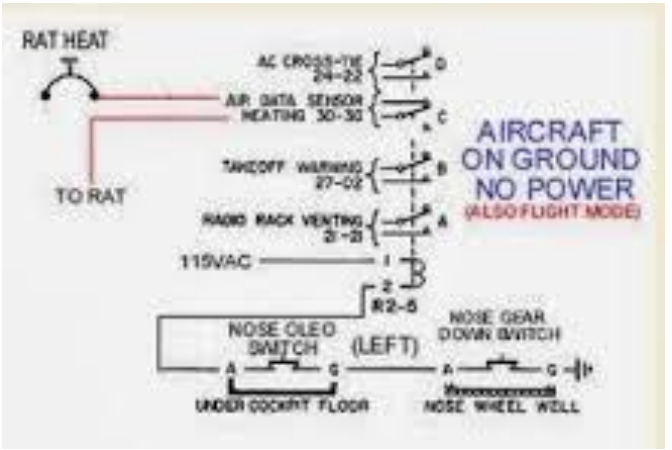
TOWS

- TOWS: Take-Off Warning System
- It is activated when sensors detect an incorrect take-off configuration

R2-5 relay

Provides electrical power to certain aircraft systems or elements

R2-5 powers the RAT probe and the TOWS.



Accident causes by CIAIAC

- The crew lost control of the airplane that was in an incorrect take-off configuration
- This was due to a series of crew's mistakes and lapses while reading the checklists
- The failure of the Take-Off Warning System (TOWS) was considered a *contributing factor* (not a cause) to the accident. The origin of the failure was not determined

The judge’s initiative

The legal case

- The judge (instructor) asked for an "expert team" (*OPC: Organo Pericial Colegiado*) in order to better understand the circumstances of the accident

The legal case

- The judge considered the experts provided by the parties were not completely impartial
- International aviation regulations limit the use of technical investigation reports for purposes other than safety improvement

The expert team

- The team was composed by independent experts:
  - 4 aeronautical engineers
  - 2 maintenance technicians
  - 2 airline pilots

The expert team

- The team had access to all the information provided in the legal proceedings
- No direct contact with CIAIAC investigators
- The aim was to provide a technical report on the causes of the accident

OPC conclusions

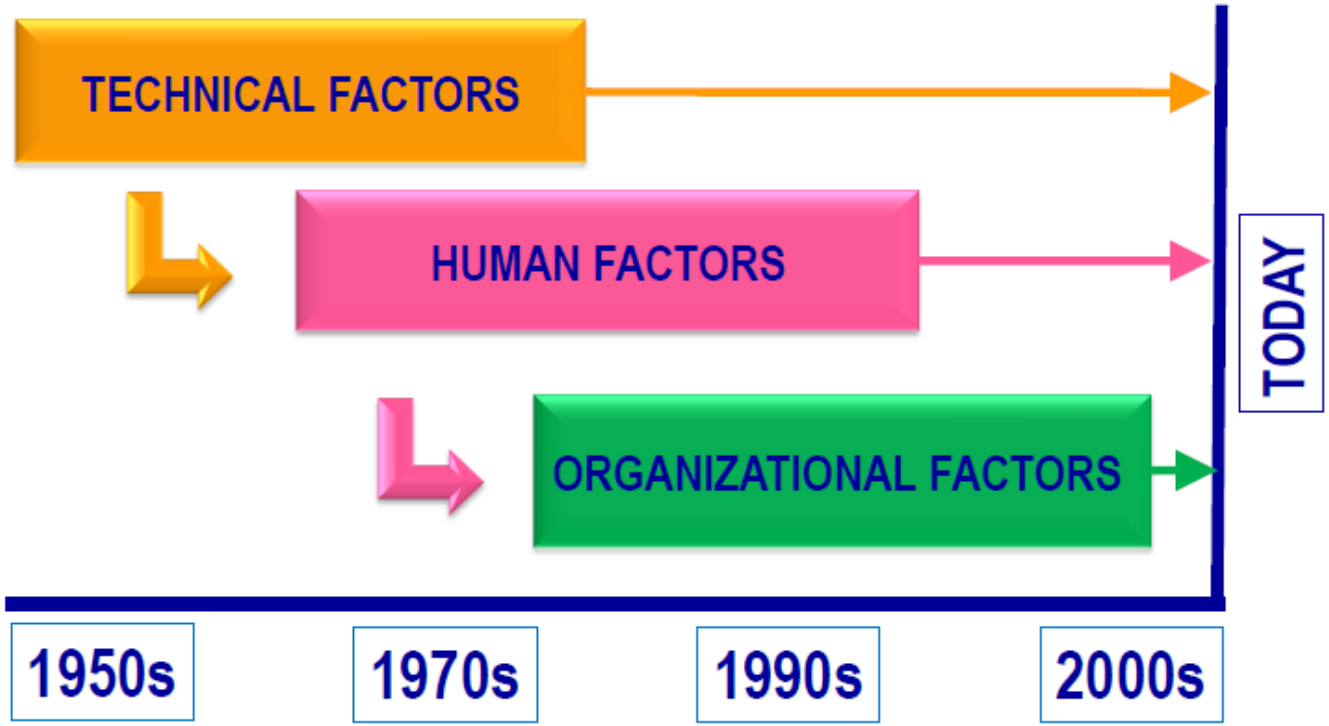
- The content of the report was agreed by the experts
- The report was released after 1,5 years of work
- The OPC determined that the accident was as a result of multiple causes that took place in a simultaneous or sequential manner

OPC conclusions

- Causes:
  - Improper crew's actions
  - TOWS failure
  - TOWS design
  - Maintenance actions
  - Maintenance documentation
  - Lack of remedial actions after similar accidents (authorities)

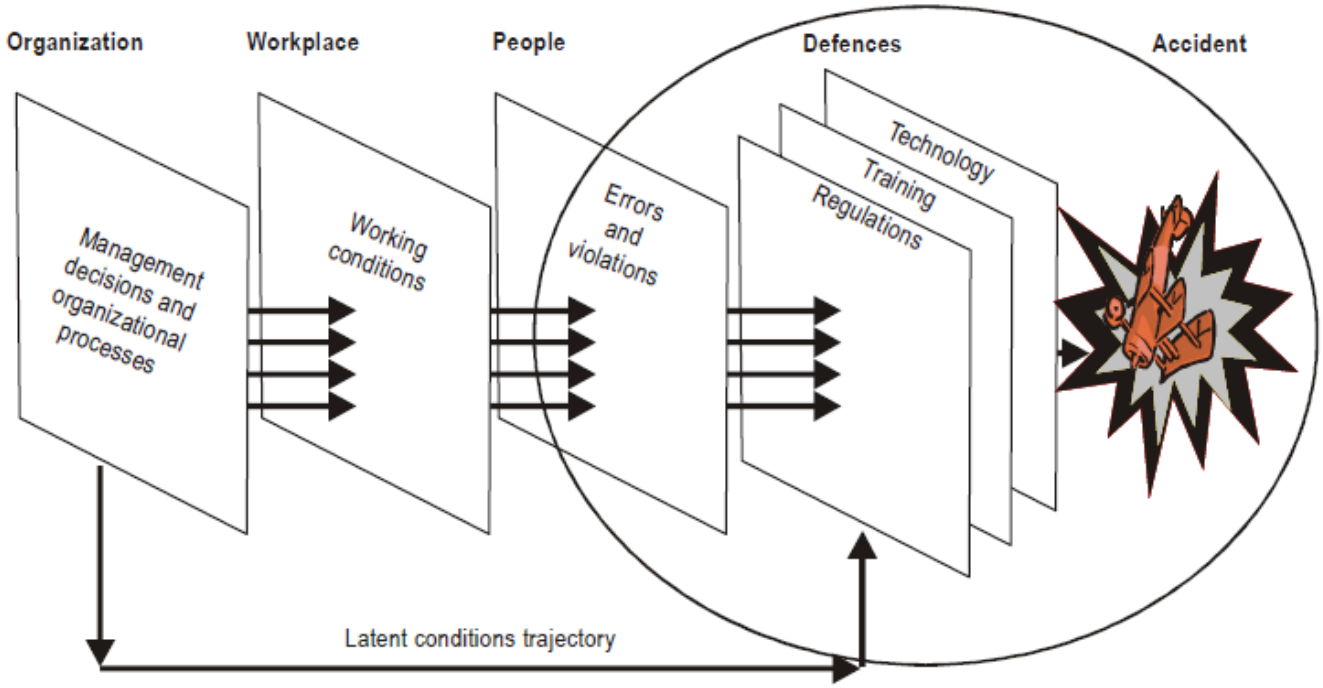
Accident investigation model

The evolution of safety thinking



From ICAO Doc. 9859

The concept of accident causation



From ICAO Doc. 9859

Systemic thinking

- It is accepted worldwide that aviation accidents today are not caused by a single factor (crew, technical, environmental,...)
- A cause is an act, omission, condition or circumstance which if eliminated or avoided would have prevented the occurrence or would have mitigated the resulting injuries or damage (ICAO Accident Investigation Manual)

Our conclusion

Conclusions

- The OPC report was much more accurate in the description of causes of the accident
- The OPC report used the modern approach to accident investigation
- The judge benefited from the OPC report in determining the causes of the accident

Conclusions

- The ideal "expert team" should include:
  - Individuals considered subject matter experts with "hands-on" experience
  - Should have trained in modern accident investigation techniques
  - Should have received some training in judicial matters

The good news!

C/ General Díaz Porlier, 49 28001 Madrid (Spain)
(+34) 91 309 67 50

www.sepla.es **sepla@sepla.es**