Network Manager
nominated by
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EUROCONTROL

Delivering Aviation Safety Knowledge

Tzvetomir BLAJEV, EUROCONTROL
Captain Ed POOLEY, The Air Safety Consultancy

SKYbrary celebrates its 10th anniversary!

SKYbrary facts

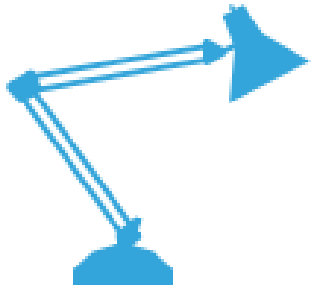
- More than 6 million page views per year.
- Close to 8000 content pages.
- A rigorous content validation process.
- The Flight Safety Foundation in the role of Editor.
- Industry-led governance by a global SKYbrary Board.

SKYbrary – where next?

To be comprehensive we need to systematically look at accidents, incidents, normal operations resilience and the knowledge needs of the industry. Here we make the first step – looking at fatal accidents.

How to target our knowledge management work?

We launched a dedicated study

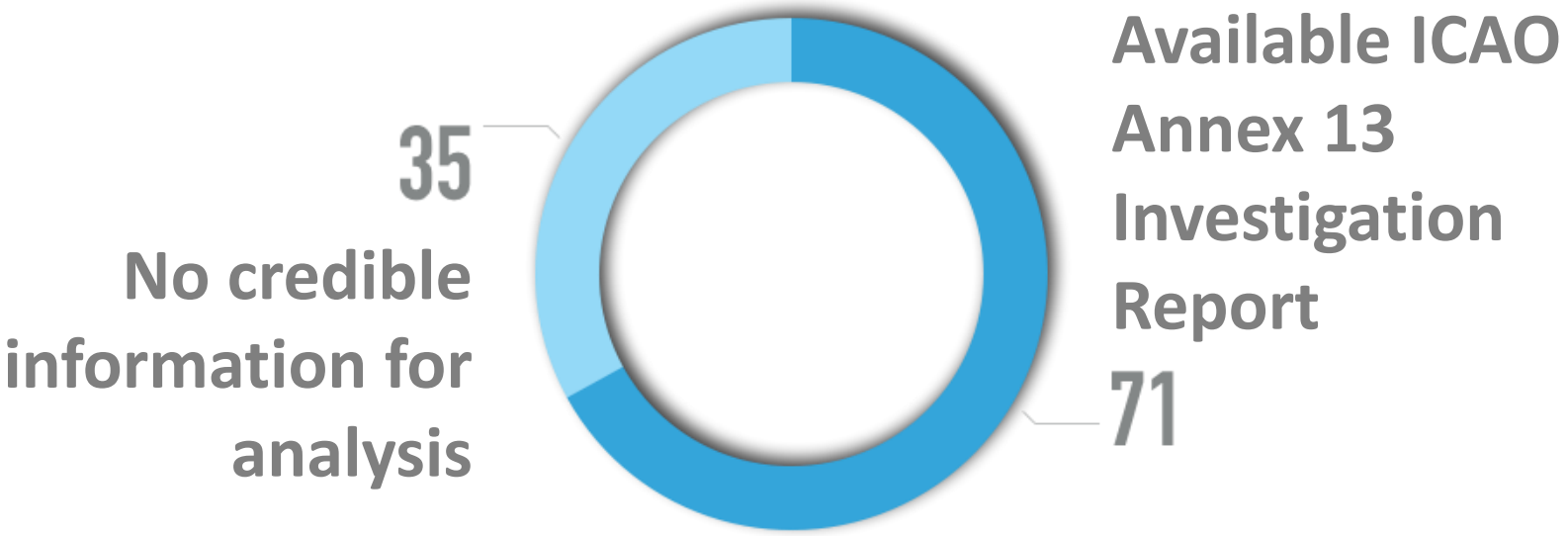


Our Objective

- To investigate the extent to which a lack of knowledge has been contributory to fatal aircraft accidents.
- By examining the evidence provided by independently-conducted investigations.
- To inform our knowledge management focus.

Data Source

- Accidents involving commercial jet transport aircraft over 27 tonnes MTOW during the 17 year period 2000 to 2016 which resulted in fatal injury to their occupants and/or to those of another aircraft which they were in collision with.



71 classifiable events in two time periods

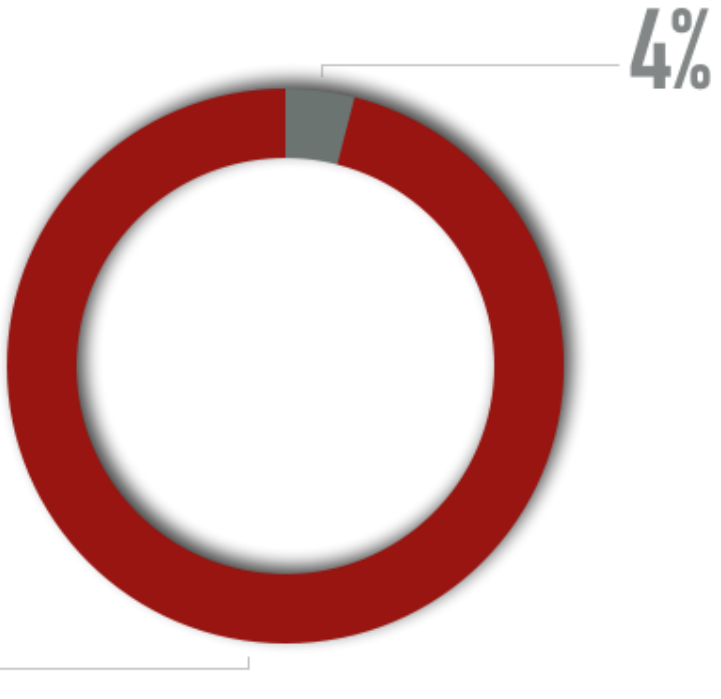
A — 2000 to mid-2008

B — Mid-2008 to 2016

An increase in airborne loss of control events from 45% in the first period to 68% in the second period with reductions for all other outcomes.

Event analysis across both periods

A direct consequence of the actions or inactions of front line personnel



For 77% - the actions/inactions of flight crew only.

For 18% - the actions/inactions of flight crew and either ATCOs or maintenance engineers.

For 4% - no front line personnel factors.

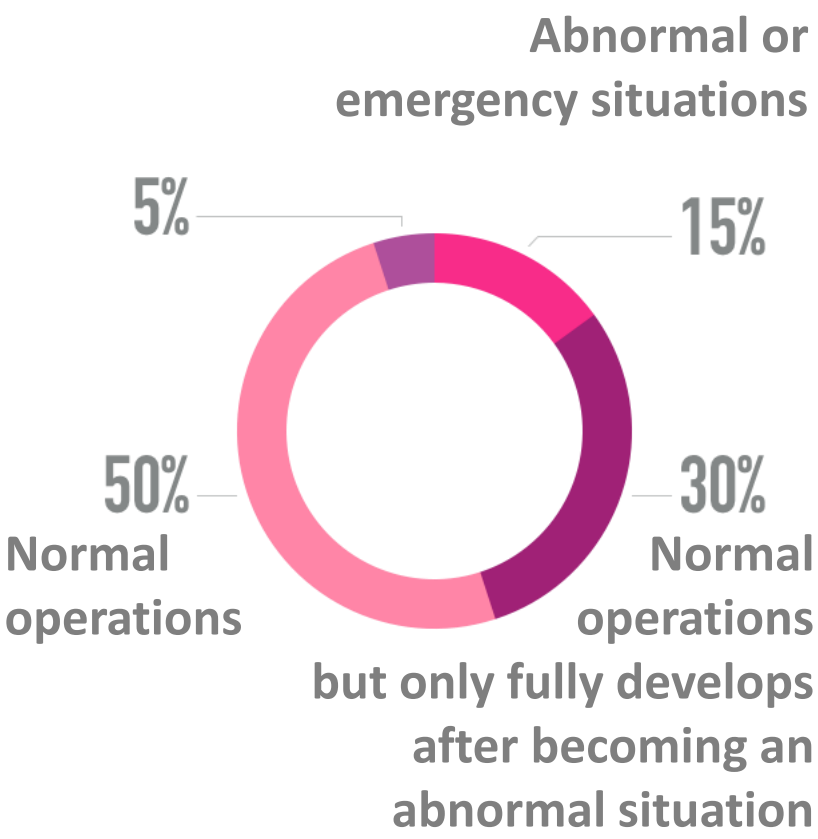
Knowledge-related factors allocated to 3 categories

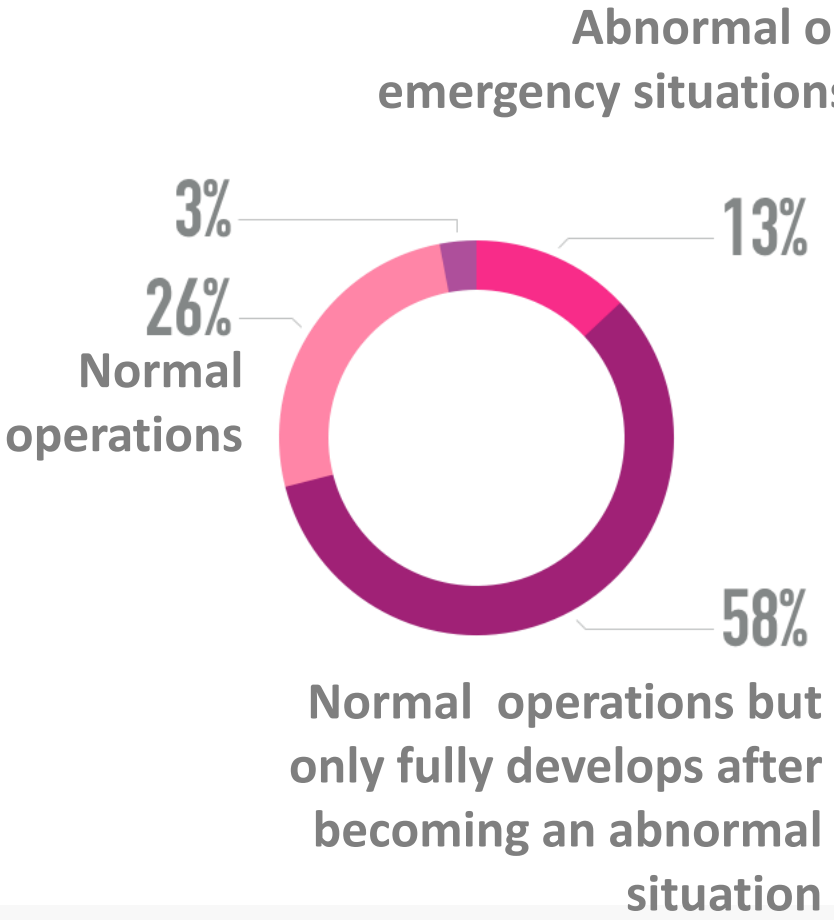
- **Front Line Personnel** - flight crew, air traffic controllers and maintenance engineers whose different actions **could** directly have prevented the accident.
- **Organisations** - airlines, ANSPs, MROs and airports whose provision of adequate training and procedures **may** have prevented the accident.
- **Safety Regulators** responsible for effective oversight of these organisations whose different actions **may** have prevented the accident (*but note that in most cases the evidence did not allow attribution of these factors to be linked to lack of knowledge*).

Flight crew actions/inactions in relation to when a problem originates

A 2000 to mid-2008

B Mid-2008 to 2016





Operating organisations' knowledge-related deficiencies - flight crew

Knowledge-related deficiency	2000 to mid-2008	Mid-2008 to 2016
A. Both Procedures AND Training	**43%**	**48%**
B. ONLY Procedures	**23%**	**23%**
C. ONLY Training	**15%**	**16%**
D. Either/both of Procedures/Training	**80%**	**87%**
E. Crew action/inaction AND Training	**58%**	**65%**

The indirect effects of ineffective Flight Operations Regulatory Oversight on Operating organisations

Risk management deficiency	2000 to mid-2008	Mid-2008 to 2016
On both Crew Procedures AND Training	33%	29%
ONLY on Crew Procedures	10%	13%
ONLY on Crew Training	8%	3%
Overall Effect on Organisations	50%	45%

The two main accident outcomes - flight crew pathway

[% of all in-period LOC-I or all in-period CFIT events]

	2000 to mid-2008		Mid-2008 to 2016	
Knowledge-related deficiency	**LOC-I**	**CFIT**	**LOC-I**	**CFIT**
Originating during normal operations	**39%**	**50%**	**19%**	**29%**
Originating during abnormal situations	**17%**	**10%**	**19%**	**NIL**
Originating in normal operations but action/inaction then creates an abnormal situation	**33%**	**40%**	**57%**	**71%**

The two main accident outcomes - flight operations Organisation factors

[% of all in-period LOC-I or all in-period CFIT events]

	2000 to mid-2008		Mid-2008 to 2016	
Knowledge-related deficiency	**LOC-I**	**CFIT**	**LOC-I**	**CFIT**
Crew Procedures only	**22%**	**20%**	**19%**	**14%**
Crew Training only	**11%**	**30%**	**19%**	**14%**
Crew Procedures AND Training	**50%**	**30%**	**57%**	**43%**

Conclusions (1)

Opportunity for providing risk management knowledge for front line operators (pilots, ATCOs, maintenance engineers)

- Front line operators are always ‘on the front line’ – it is not surprising to find that often their actions or inactions are present in the accident sequence.
- For the analysed set of accidents, procedural non-compliance often appeared to be founded on an inadequate understanding of the rationale which underlies both normal and abnormal/emergency procedures.

Conclusions (2)

Flight crew domino effect: normal – abnormal operations

- For the analysed set of accidents, inappropriate normal operations are often the precursor to inappropriate responses to consequent abnormal/emergency situations.

Conclusions (3)

Opportunity to address the Organisations lack of adequate procedures and training

- For the analysed set of accidents, although the actions of pilots and all front line personnel are almost always guided by procedures, these are not always adequately defined or, where they are, adequately trained.
- At least one or more and often both of these factors were present in almost all of the accidents analysed.

SKYbrary :

supports safety by providing access to generic risk management content via an easily searchable single source website with:

Articles relevant to all aspects of operational safety risk management and a huge range of supporting documents which can be and are being accessed and referenced by all those who are responsible for keeping the accident rate as low as possible, both individuals and organisations.

The SKYbrary Operational Safety Categories:

The SKYbrary Accidents and Incidents Library:

A collection of over 1000 (and growing) summaries of selected independently investigated Accidents and Incidents which have lessons for a wider audience than those involved in them which are accompanied by one click access to copies of the corresponding Official Reports if required.

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SKYclips - awareness and training resource (15 so far)

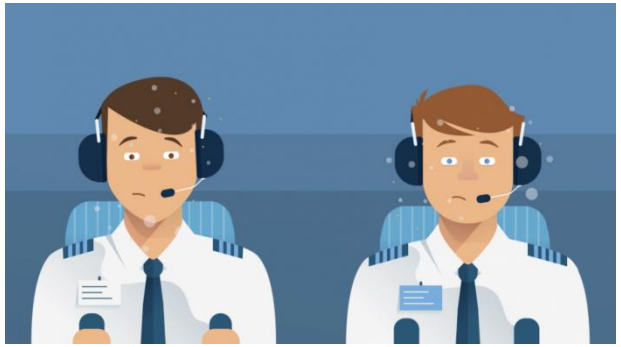
Short animation videos available on SKYbrary:

http://www.skybrary.aero/index.php/Solutions:SKYclips

Stop Bars

Conditional Clearance

Landing Without Clearance



Startle effect

Everyone can help!

- **Participate in content improvement**
- **Get involved in creating a SKYclip**
- **Sponsor an article development**
- **Sponsor a SKYclip production**
- **Contribute in kind with safety knowledge**
- **Promote SKYbrary**

An appeal to the industry leaders – please lead by example, share what works beyond just compliance and help us maintain SKYbrary as an industry resource!