

Germanwings accident
24 March 2015.
An overview

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Plan

- Main points of the accident
- Mental health risk in context
- Previous pilot intended crashes/mental health incidents
- Germanwings Accident Investigation Report recommendations

French CAA Investigation Authority (BEA) Accident investigation report (March 2016)

<https://www.bea.aero/en>

- Filter with “D-AIPX”

Airbus A 320

Barcelona – Dusseldorf, 24 March 2015

144 passengers + 4 cabin crew/2 pilots



- 38,000 feet, captain left flight deck
- Co-pilot prevented the captain from re-entering the flight deck
- Co-pilot effected a controlled flight into terrain
- All 150 occupants were killed

Co-pilot's history (age 27 years)



- **April 2008** – Age 20, selected by Lufthansa for *ab initio* training: passed tests including personality traits/interpersonal skills
- **April 2008** – Initial Class 1 (unrestricted). No psychiatric/psychological concerns
- **September 2008** – commercial pilot training commenced
- **November 2008** – training suspended: severe depression (hospitalised) with suicidal ideation. No psychosis.
- **Jan-Oct 2009** – antidepressants + psychotherapy
- **July 2009** – “severe depressive episode was over”, Class 1 issued with limitation*:
 - “Specific regular medical examinations – contact the licensing issuing authority”. “would become invalid if there was a relapse”
- **August 2009** – commercial pilot training recommenced

Co-pilot's history (cont'd)

- **July 2010 - July 2014** – Class 1 regularly re-issued with same limitation – no specialist psychiatric reviews
- **December 2014 - March 2015**
 - Consulted several health care professionals: physician/psychiatrist/psychotherapist – none involved in aeromedical assessment
 - Vision problems, sleep disorder, anxiety. “Possible psychosis” diagnosed two weeks prior to accident
 - Antidepressants, hypnotics
 - Six documented periods of sick leave last 3/12
 - Flew 35 days in this period
 - Regulator/airline/colleagues/peer support groups all unaware of ill health

The Context

Medical cause fatal accidents 1980-2000

Global, 2-pilot aircraft, over 5700 kg

Year	Aircraft	Medical problem	Confidence
1982	DC 8	Schizophrenia *	High
1982	Citation	Alcoholic impairment *	High
1982	Metro	Vomiting (P2)	High
1983	Learjet	Use of marijuana (P1 & P2)*	High
1988	Metro	Use of cocaine	High
1989	FH 227	Alcohol (P2)	High
1990	Learjet	Slurred speech, ? cause *	Medium
1993	Learjet	Alcohol/cocaine (P1)	High (private)
1994	ATR 42	Suicide *	Low
1999	An 26	Alcohol (P1 & P2) *	Medium

* Primary Cause

(Excluding hypoxia, fumes, fatigue)

Jet Blue flight 191, April 2012

New York – Las Vegas (diverted Amarillo, Texas)



Captain Clayton-Osbon, charged with “interference with the flight crew” – not guilty by reason of insanity

AsMA view, August 2012

Aerospace Medical Association



President
P. Glenn Merchant, M.D., M.P.H., & T.M.
Colorado Springs, CO 80920

320 So...
Administrators Office

August 6, 2012

Administrator

ation Administration
Independence Ave, SW
Washington, DC 20591

Subject: Pilot Mental Health - Expert Working Group Recommendations

The Aerospace Medical Association is a professional organization of 2,500 physicians, nurses and scientists engaged in the clinical practice of aerospace medicine and related research and education activities.

Recent events involving a potential disturbance of mental health in pilots (ref 1,2) prompted the

<http://www.ingentaconnect.com/content/asma/asem/2012/00000083/00000012/art00012>

“...recommend greater attention be given to mental health issues by aeromedical examiners and by the aviation community in general”



International Civil Aviation Organization

ELECTRONIC BULLETIN

For information only

EB 2012/53

31 October 2012

PILOT MENTAL HEALTH

1. The Aerospace Medical Association (AsMA) has recommended that ICAO should pay more attention to mental health issues in pilots and has requested ICAO to facilitate the distribution of a working group. These recommendations are outlined in a letter dated 14 September 2012.
2. ICAO agrees with AsMA that more attention should be given to mental health issues in pilots and the recently revised [2012] Manual of Civil Aviation Medicine (Doc 8984) contains relevant guidance. Part I, Chapter 2, Section 2.1.1 (Mental fitness) refers to the following information and references to relevant subject matter which may find useful.

Letter from AsMA to ICAO

Issued under the authority of the Secretary General

1982-2015

Six Previous pilot-intended *fatal* crashes

(selected – from Accident Report)

- Six others described in accident report – non-fatal (5) or drug related

9 Feb 1982, DC-8, Japan Airlines Japan - 24 fatalities

After having disengaged the autopilot on final approach at a height of 164 ft, the pilot pushed the control column forward and set the thrust levers on idle. He then moved the thrust levers of engines 2 and 3 to the reverse idle position. While the aircraft's attitude decreased, the co-pilot tried to pull on the control column. The co-pilot was unable to raise the nose of the aeroplane because the Captain was pushing forward on the control column with both hands. The aircraft crashed into the sea 510 m short of the runway. The investigation showed that the pilot's actions resulted from a mental problem. He was suffering from schizophrenia.



21 Aug 1994, ATR 42, Royal Air Maroc,
Morocco – 44 fatalities

The Captain disengaged the autopilot
and deliberately directed the aircraft
towards the ground. The co-pilot was
in the cockpit but was not able to
counter the Captain's actions.



19 Dec 1997, B737, Silk Air, Indonesia – 104 fatalities

While the aircraft was in cruise at 35,000 ft, the flight recorders stopped recording one after the other. The aeroplane suddenly started to descend. No Mayday message was transmitted before or during the descent. The aircraft crashed into a river. The safety investigation was not able to identify any technical problem that would make it possible to explain the accident.



11 Oct 1999, ATR-42, Air Botswana, Botswana – 1 fatality

The pilot, the only person on board, deliberately flew the aeroplane into the ground by crashing at Gaborone airport. The validity of his licence had been revoked for medical reasons.



31 Oct 1999, B767 EgyptAir, North Atlantic Ocean – 217 fatalities

The aeroplane was in cruise at flight level FL330 with a flight crew consisting of a Captain, a duty co-pilot and a relief co-pilot. The duty copilot left the cockpit, and the relief co-pilot took his place in the right seat. Eight minutes later, the Captain left the cockpit in turn, leaving the relief co-pilot alone. The autopilot was then disengaged and nose-down inputs were recorded on the FDR. The aeroplane descended. The engines were shut down. The Captain returned to the cockpit and tried to take back control of the aeroplane. The Captain repeatedly asked the co-pilot to help him to pitch up the aeroplane (“pull with me”) but the latter continued to command the elevator to pitch nose down. The aeroplane regained altitude before descending again. It collided with the surface of the ocean. The reasons that led the co-pilot to take these actions could not be determined.



29 Nov 2013, ERJ 190, LAM, Namibia – 33 fatalities

The aeroplane was in cruise at flight level FL380 when the co-pilot left the cockpit to go to the toilet, leaving the Captain alone. On three occasions, different altitudes were selected to order a descent to the ground with autopilot. The CVR showed several aural warnings, as well as noises of repeated knocking and calls, corresponding to attempts to get into in the cockpit.



Other incidents/accident

- 1996: British Airways, BAC 1-11 - FO “frightened of the altitude”. Diverted safely to Lyon.
- 2001: Galaxy Air Cargo, DC3 – [Fatalities x 2] Night VFR collision with volcanic mountain. Capt – cocaine, FO two antidepressant drugs
- 2008: Air Canada, B767 – FO “belligerent and uncooperative”. Diverted safely to Shannon.
- 2009: Mesaba, Saab 340B – “Flt attendant” no longer coherent”. Diverted safely.
- 2012: JetBlue, A320 – Captain “things just don’t matter”, “we’re not going to Vegas”, began “a sermon”. FO locked the captain out of the flight deck and diverted safely into Amarillo
- 2015: Condor, A320 – Diverted safely to Faro. Copilot subsequently “exhibited behaviour ...that raised psychiatric concerns”

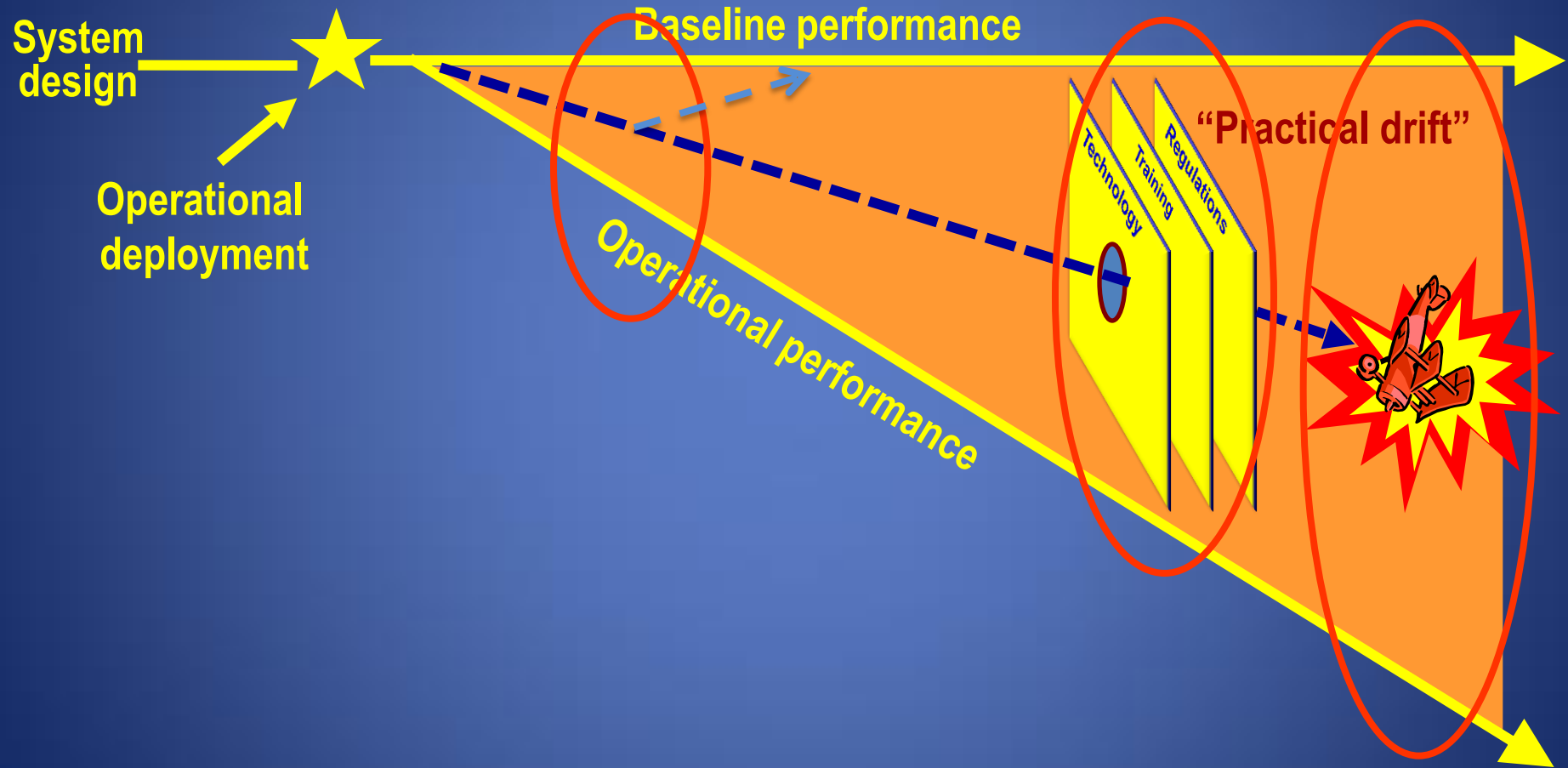
Summary of data

- Last 34 years – 12 mental incapacitation events > fatal accident or diversion - very few accidents from physical incapacitation
 - **Mental incapacitation poses a greater risk to flight safety than physical incapacitation** (in large aircraft)
- Second pilot on flight deck does not always prevent pilot intended crashes

Prevention?

Safety Management perspective

– finding safety risks early



Summary of Safety Recommendations from BEA

1. Medical evaluation of pilots with mental health issues

- EASA require that when a class 1 medical certificate is issued to an applicant with a history of psychological/psychiatric trouble of any sort, conditions for the follow-up of his/her fitness to fly be defined. This may include restrictions on the duration of the certificate or other operational limitations and the need for a specific psychiatric evaluation for subsequent revalidations or renewals.

[Recommendation FRAN-2016-011]

2. Routine analysis of in-flight incapacitation

- EASA include in the European Plan for Aviation Safety/in coordination with the Network of Analysts an action for the EU Member States to perform a routine analysis of in-flight incapacitation, with particular reference but not limited to psychological or psychiatric issues, to help with continuous re-evaluation of the medical assessment criteria, to improve the expression of risk of in-flight incapacitation in numerical terms and to encourage data collection to validate the effectiveness of these criteria.
- [Recommendation FRAN-2016-012], [Recommendation FRAN-2016-013]
- Will become an ICAO Standard in 2018 (already a Recommended Practice)

3. Mitigation of the consequences of loss of licence

- EASA ensure that European operators include in their Management Systems/IATA encourage its Member Airlines to implement measures, to mitigate socio-economic risks related to a loss of licence by one of their pilots for medical reasons.

[Recommendation FRAN-2016-014], [Recommendation FRAN-2016-015]

4. Anti-depressant medication and flying status

- EASA define the modalities under which EU regulations would allow pilots to be declared fit to fly while taking anti-depressant medication under medical supervision.
- [Recommendation FRAN-2016-016]

5. Balance between medical confidentiality and public safety

- The World Health Organization develop guidelines for its Member States in order to help them define clear rules to require health care providers to inform the appropriate authorities when a specific patient's health is very likely to impact public safety, including when the patient refuses to consent, without legal risk to the health care provider, while still protecting patients' private data from unnecessary disclosure. [Recommendation FRAN-2016-017]
- The European Commission in coordination with EU Member States define clear rules to require health care providers to inform the appropriate authorities when a specific patient's health is very likely to impact public safety, including when the patient refuses to consent, without legal risk to the health care provider, while still protecting patients' private data from unnecessary disclosure. These rules should take into account the specificities of pilots, for whom the risk of losing their medical certificate, being not only a financial matter but also a matter related to their passion for flying, may deter them from seeking appropriate health care [Recommendation FRAN-2016-018]
- Without waiting for action at EU level, the BMVI and the Bundesärztekammer (BÄK) edit guidelines for all German health care providers to:
 - remind them of the possibility of breaching medical confidentiality and reporting to the LBA or another appropriate authority if the health of a commercial pilot presents a potential public safety risk.
 - define what can be considered as “imminent danger” and “threat to public safety” when dealing with pilots' health issues
 - limit the legal consequence for health care providers breaching medical confidentiality in good faith to lessen or prevent a threat to public safety [Recommendation FRAN-2016-019 and FRAN-2016-020]

6. Promotion of pilot support programmes

- EASA ensure that European operators promote the implementation of peer support groups to provide a process for pilots, their families and peers to report and discuss personal and mental health issues, with the assurance that information will be kept in-confidence in a just-culture work environment, and that pilots will be supported as well as guided with the aim of providing them with help, ensuring flight safety and allowing them to return to flying duties, where applicable.

[Recommendation FRAN-2016-021]

Summary

- Mental illness is currently the single greatest aeromedical risk to flight safety
- Mental incapacitation does not necessarily pose the greatest risk during take off and landing – risk is spread throughout the flight
- A quantitative target risk should be $\leq 0.01\%$ p.a. (cf. ICAO 1% p.a. for physical risks)
 - Accident report statement
- Psychotic illness is particularly challenging
 - Uncommon, difficult to predict and extremely difficult to manage in flight

Two Main Points

1. “Whole of society” approach is needed – change of culture to emphasise *mental health*
2. Regulator is key
 - Promote a regulatory *Just Culture*
 - Harmonise health promotion activities in all stakeholders
 - Medical examiners; airlines; unions

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