

Beyond Germanwings Flight 9525: Pilot mental health and safety

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The likely suicide of the First Officer on Germanwings Flight 9525 on the 25th March 2015 and murder of the passengers and crew in the accident has focussed recent attention on the issue of pilot mental health, and its impact on safety. In this article we will look at the resulting regulation changes and some of the issues raised by the accident itself, the findings of the EASA 2015 Task Force and the EASA Aircrew Medical Fitness Opinion 14/2016, issued in December 2016. The issues include:

- The incidence of common mental disorder amongst pilots and its relationship to safe aircraft operation

- The assessment mechanisms for pilot mental health

- Potential issues arising from the identification of mental health issues in pilots, and possible support mechanisms

The regulatory response to Germanwings Flight 9525

After the accident EASA quickly put together a task force to look at the implications including the physical and psychological health of pilots. 6 evidence-based recommendations were made that formed the basis of a rule-making task and subsequent opinion issued in 2016 – see table 1.

Table One: Recommendations of EASA Task Force on measures following the accident of Germanwings flight 9525

Recommendation 1	The Task Force recommends that the 2-persons-in-the-cockpit recommendation is maintained. Its benefits should be evaluated after one year. Operators should introduce appropriate supplemental measures including training for crew to ensure any associated risks are mitigated.
Recommendation 2	The Task Force recommends that all airline pilots should undergo psychological evaluation as part of training or before entering service. The airline shall verify that a satisfactory evaluation has been carried out. The psychological part of the initial and recurrent aeromedical assessment and the related training for aeromedical examiners should be strengthened. EASA will prepare guidance material for this purpose.
Recommendation 3	The Task Force recommends to mandate drugs and alcohol testing as part of a random programme of testing by the operator and at least in the following cases: initial Class 1 medical assessment or when employed by an airline, post-incident/accident, with due cause, and as part of follow-up after a positive test result.
Recommendation 4	The Task Force recommends the establishment of robust oversight programme over the performance of aeromedical examiners including the practical application of their knowledge. In addition, national authorities should strengthen the psychological and communication aspects of aeromedical examiners training and practice. Networks of aeromedical examiners should be created to foster peer support.
Recommendation 5	The Task Force recommends that national regulations ensure that an appropriate balance is found between patient confidentiality and the protection of public safety. The Task Force recommends the creation of a European aeromedical data repository as a first step to facilitate the sharing of aeromedical information and tackle the issue of pilot non-declaration. EASA will lead the project to deliver the necessary software tool.
Recommendation 6	The Task Force recommends the implementation of pilot support and reporting systems, linked to the employer Safety Management System within the framework of a non-punitive work environment and without compromising Just Culture principles. Requirements should be adapted to different organisation sizes and maturity levels, and provide provisions that take into account the range of work arrangements and contract type.

That Opinion – which is now being considered as changes to the Air OPS Implementing Rules – proposed two changes that derive from the Task Force recommendations:

- (1) carrying out a psychological assessment of all flight crew before commencing initial line flying for an operator
- (2) enabling, facilitating and ensuring access to a flight crew support programme

Since the publication of the Opinion, and in response to the second of those recommendations, the CAA has issued an Information Notice (IN-2017/005) setting out guidance for operators on Pilot Support Programmes (PSP). This provides a framework for a such a programme that should form part of the Operators Safety Management System, and proposes that any PSP needs to include the following elements:

- a) Education on mental health in the aviation workplace
- b) Pilot - Peer Assistance Network (P-PAN)
- c) Training
- d) Wellbeing and health promotion
- e) Critical incident support
- f) Mitigation of risk of loss of licence
- g) Evaluation and feedback

The EASA Opinion is currently with the European Commission to be used as the basis for the preparation of the amended Air OPS Regulation, possibly in late 2017.

Pilot mental health and safety

Pilot suicide itself remains, thankfully, rare. A systematic review of aircraft-related suicides in the United States between 2003 and 2012 reported that pilot suicides accounted for less than 1% of aircraft fatalities. When they do happen, however, media attention is disproportionate to occurrence, particularly in the rare cases that involve commercial aircraft operations. More common are aviation incidents where flight safety has been compromised by mental health issues involving the pilots. Examples include a 2008 incident where an Air Canada co-pilot was forcibly removed from the cockpit and restrained after experiencing a breakdown in flight, and a 2012 incident where a JetBlue Airways captain became delusional, manic, incoherent and physically threatening. The pilot was restrained and the aircraft made an emergency landing.

However severe psychological disturbances amongst operational pilots are also rare, and in most cases transient and susceptible

to treatment. There are some exclusion conditions – for example overt psychosis – that stop a licence being granted, but the most common issues experienced during day-to-day operations fall into the category of “mild mental disorder”. In some ways these have a more severe impact on flight safety as they will have an impact on the working cockpit environment and the relationship between crew members. A recent Brazilian study of commercial airline pilots looked at the incidence of “common mental disorders” including:

- Non-psychotic depressive symptoms
- Anxiety
- Somatic complaints (headache, lack of appetite, tremors, indigestion)
- Difficulty in concentrating and making decisions
- Forgetfulness
- Insomnia
- Fatigue
- Irritability
- Feelings of uselessness

Findings showed that there was a lower level of each of these compared to the general population, but a higher level when workload and fatigue were factored in. A European survey commissioned by BALPA and carried out by psychologists at UCL used a standard test – the Hospital Anxiety and Depression Scale – and found an increased incidence of, and a positive correlation between, reported symptoms of anxiety and depression and fatigue and work patterns amongst a sample of commercial pilots. My own research, using a standard questionnaire examining mild mental disorders such as anxiety and depression – the GHQ-28 – with a large group of commercial rotary-wing pilots, showed a lower level of common psychiatric symptoms compared to the general population. On the whole pilots seem to be slightly less prone to these mild mental disorders than most people, until the issues of workload, fatigue, the demands of the aviator lifestyle and the operational working environment take their toll. External factors to the cockpit, including financial pressure, relationship and family issues and fear of loss of licence and livelihood, can also lead pilots to be uniquely subject to heavy personal pressures. All of these can have a safety impact – the physical symptoms of heightened anxiety, distractibility, social withdrawal and low self-esteem will

have an effect on the performance of even the most technically competent pilots, and will have a similar effect on the crew working environment.

Psychological assessment of pilots

We've seen above that EASA have recommended that flight crew undergo psychological assessment prior to starting line flying with an operator. Psychological assessment of pilots – usually involving psychometric testing – has been around as long as aviation has existed. However a key distinction needs to be made about what the purpose of the testing is. Many operators use psychometric testing as part of the recruitment process – this is generally aimed at gathering information on pilot **aptitude**, and often involves assessing intellectual and reasoning ability, more specific cognitive skills and personality. These tests are usually administered by recruiters or HR staff, and the results usually remain confidential to the recruitment process and are not passed to training or operations managers. EASA stated that a psychological assessment at the level of Part-MED must not be confused with recruitment assessment. In the Opinion they say:

"EASA confirms and further clarifies that the assessment should only assess the personality of the flight crew to ensure a valid prediction of responsible and safe behaviour of the pilot in respect of the work environment. The aim is not to mirror the Class 1 assessments, but rather to ensure that the specific challenges of the operator are duly reflected in the recruitment process."

What is being suggested is more of a **clinical** assessment. However the psychometric assessment of potential mental disorder and ill-health is notoriously unreliable. There are some commonly-used tests such as the ones mentioned in the last section, but their predictive validity – that is how well they pick up psychological issues – is limited and time-bound.

Scoring in the bounds of normality on one day does not predict future issues arising, and particularly in the world of aviation where as we have seen there are specific and unique psychological pressures. A rigorous psychological assessment that meets the EASA intentions will include some psychometric assessment, but will rely more heavily on clinical interviewing and formulation.

There is an evidence base for understanding which personality factors have an impact on safety. The work of Sharon Clarke relating the Big 5 personality factors (extraversion, neuroticism, conscientiousness, agreeableness and openness) to involvement

in accidents indicates that safe operators tend to be those people who show higher levels of agreeableness (i.e. they get on well with others and are concerned for other's welfare) and conscientiousness (i.e. they have attention to detail and stick to procedures). However Ray King, a USAF psychologist, has researched the relationship between the personality factor of conscientiousness and unsafe acts in the air. Very high levels of conscientiousness could be linked to a higher level of safety-related incidents during flying because of a tendency to resort to checklists and process when flexibility, alertness and situational awareness are needed. Some assessment of these factors would meet the requirement for a valid prediction of responsible and safe behaviour in command of an aircraft.

Mental health issues and pilot support

Above we mentioned CAA IN-2017/005 contained guidance for operators on establishing pilot support programmes as recommended in the EASA Opinion, with the emphasis on peer support programmes, which operate in many work setting and are based on a shared understanding and mutual respect amongst people in similar situations. The Stiftung Mayday programme that operates in Germany is a good example of such a scheme, and it provides a "safe haven" for pilots in need of emotional support, as well as extending to their families. The programme is sponsored by operators, manufacturers, pilot unions and government but operates independently. The CAA is currently conducting a feasibility study into the possibilities of setting up a similar scheme in the UK. A joint initiative between Stiftung Mayday, the European Association for Aviation Psychology, the European Society of Aviation Medicine and the European Cockpit Association, called EPPSI – European Pilot Peer Support Initiative – has been established and aims to provide best practice information to operators and pilot representatives. The CAA Information Notice highlights some key elements of a pilot support programme including;

- a) Education on mental health in the aviation workplace
- b) Pilot - Peer Assistance Network (P-PAN)
- c) Training
- d) Wellbeing and health promotion
- e) Critical incident support
- f) Mitigation of risk of loss of licence
- g) Evaluation and feedback

The programme needs to be part of an operator's SMS, and needs to involve relevant professionals such as psychologists, psychiatrists and AMEs who have aviation experience. The heart of the programme is the peer support network – "P-PAN", which

is "a facility for a pilot to contact a trained peer on a confidential basis when they require help, advice or assistance with a developing social, personal or health issue". It aims to provide a first point of contact for pilots who might be experiencing the signs and symptoms of what were described above as common or mild mental disorders, and direct them towards the appropriate level and source of support. In discussion with a number of fixed and rotary wing commercial operators, a number of issues have been raised about how implementing IN-2017/005 will work in practice. These include:

- The issue of confidentiality and anonymity. This is key to an effective peer support programme, but offers challenges to smaller operators with fewer pilots who are often rostered together, may also undertake pilot management roles in addition to line duties, and may also socialise together outside work. Maintaining confidentiality is more difficult in such situations. There is also the dilemma of when and how confidentiality should be broken if there are significant safety concerns about a pilot on the part of a peer supporter. The EASA Task Force identified the maintenance of strict medical confidentiality as a significant factor in the Germanwings accident, and the Opinion sets out ways in which this might be handled, with the maxim "safety overrides confidentiality".
- For smaller operators an issue linked to confidentiality if that of potential stigmatisation of pilot support programme users. A barrier to uptake of the service could exist if pilots are concerned about how well confidentiality will be preserved in a small group of peers.
- The selection and training of peer supporters (suggested to be 1% of the target population) has operational and financial implications for operators, and may be more difficult to resource in smaller airlines. This is something that is being addressed by the CAA in the feasibility study on providing an independent service along the lines of Stiftung Mayday.
- The linkage between an operators' SMS and the pilot support programme is not clear – one is a rules based reporting and assurance system, the other a relationship based system that is more closely linked to human resource systems and policies. The EPPSI Key Elements document suggests that this relationship is one of reporting – including anonymised data on uptake, outcomes such as successful return to flying and relapse rates.

- Clarity will be needed on the extent of the peer supporter's responsibilities and where they might potentially have a role in removing from the flight schedule the crew members that join the support programme without jeopardising confidentiality. The reason why the crew member is removed from the flight schedule must remain confidential. In essence this transfers a management responsibility onto a volunteer with no management role. I can imagine the conversation with a Flight Ops Manager or Chief Pilot that starts "I've taken a pilot off the line today but I can't tell you why....!" An effective pilot support programme will need clear boundaries between the scope and role of peer supporters and flight operations managers, together with appropriate protocols for action where there are serious concerns about a risk to flight safety on the part of a peer supporter working with an individual pilot.

Conclusion

From the tragic outcome of Germanwings Flight 9525 has come an increased realisation of the role that mental health and wellbeing plays in the working life of pilots. Future regulation change will go some way to ensuring this focus is maintained, despite identified difficulties in implementing programmes such as routine psychological assessment and pilot support systems. Such changes will also have implications in other areas of human factors, including the content of CRM programmes as mental health and wellbeing needs to be on the agenda and part of the CRM syllabus with a greater focus on selfawareness and positive steps to maintaining well mental being. Similarly EASA has moved towards increasing the rigour of mental state examination as part of a Class 1 medical. Perhaps the most positive outcome of the Germanwings accident will be pilot's own increased awareness of mental health issues and their relationship to the safe operation of aircraft.

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