The Pilot Lifestyle: a sociological study of the commercial pilot's work and home life
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In 2010 BALPA, concerned to develop a fuller understanding of pilot fatigue, stress and other factors, decided to investigate the pilot lifestyle. The intention was to use the data to inform EASA's deliberations on a new Europe-wide Flight Time Limitation (FTL) scheme. The pilot lifestyle is under-researched. BALPA knew that an FTL developed without reference to an accurate model of pilots' physical and psychological capacities and general behaviour patterns might increase rather than reduce risk.

A sociological study was made of the pilot lifestyle using three research instruments: a Sleep Log (SLOG), an on-line questionnaire and interviews. By the end of the research period (Summer 2010 – Spring 2011) the report's author, Dr Simon Bennett, had analysed over 130 SLOGs and 433 questionnaires.[1] He had also interviewed a number of pilots. The end product is a pilot's-eye view of today's aviation industry. Although the author sorted and interpreted the data, *the dominant voice is that of the pilot*. The main themes to emerge from the SLOGs, questionnaires and interviews are described below.[2]

1 Sleep debt
One hour of sleep generates about two hours of productive wakefulness (sleep credit). So, for example, six hours sleep would generate about twelve hours sleep credit. When a pilot has used up all her/his sleep credit, s/he moves into sleep debt. Sleep debt has cognitive impacts: reasoning slows; reaction times slow. Sleep debt is a safety issue. The data showed that both long- and short-haul pilots accumulate sleep-debt. One low-cost pilot flew an approach into a U.K. airport with a sleep debt of 16 hours. Over 86% of those who completed the on-line questionnaire ('respondents') said they had flown a sector when knowingly fatigued. Sleep debt creates a road safety risk. Over 92% of respondents said they had driven home in a state of fatigue. The sleep debt problem can start at home: Over 84% of respondents said they had failed to get adequate rest at home. Irritants included telephone calls (cited by 23% of those who said they had failed to get adequate rest), extraneous noise (23%), household noise (24%), work-related stress (27%), household duties (43%) and family-related stress (53%).

2 Extended periods of wakefulness on a duty day
Over 86% of respondents said they had experienced a period of continuous wakefulness exceeding 18 hours on a duty day. Of these, over 20% said they had experienced a period of continuous wakefulness equal to or exceeding 28 hours. One of the pilots in this latter group said he felt "'Drunk' with tiredness. I was unable to carrying out any task that required any form of mental agility." Another said he felt "Punch drunk. Utterly exhausted. Incapacitated. I checked straight into a hotel and didn't even drive home." A study by the U.S. National Transportation Safety Board found

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[1] SLOGs, kept by volunteers for three weeks, ranged in size from 2,000 to 9,000 words. The questionnaire contained 54 questions and produced statistical data and written evidence. The interviews, which could last several hours, were tape-recorded, then transcribed verbatim.

[2] This paper presents a brief summary of the Main Report. The Main Report can be purchased from the University of Leicester (at cost price). Please go to http://www2.le.ac.uk/departments/lifelong-learning/research/publications-1/vaughan-papers where you will find an Order Form. Staff members Ms Louise Taylor (lm40@le.ac.uk) and Ms Victoria Anderson (va50@le.ac.uk) can help with purchase requests. You can send feedback on the Report to Dr Simon Bennett at sab22@le.ac.uk

that Captains who had been awake more than 12 hours made significantly more errors than those who had been awake less than 12 hours. One respondent wrote: "On returning to LGW I would basically be asleep or nodding off between the Isle of Wight and 1,000ft on approach. After two days 'off' (read sleeping and ironing) I would do 5 days on, each of approximately 12 duty hours. With my drive to work, and a 30 minute bus drive from the car park to the crew centre, I would be out of my house for at least 15 hours a day."

3 Roster instability

While most pilots understand that rosters may be changed at short notice, roster instability (volatility) creates a latent risk. Pilots plan their sleep according to the current roster. When that roster changes (a not-infrequent occurrence) pilots may find themselves short of sleep. Although few pilots can sleep-to-order most try to do the right thing. A pilot who is operating that night will retire in the late afternoon. Few get the sleep they need, however, resulting in long periods of wakefulness. The authors of the book *The Myth of Work-Life Balance*[3] claim that "paid work has become increasingly demanding and invasive in people's lives." Because roster changes thwart pilots' plans for rest and recreation, they undermine the work-life balance. Nearly 80% of respondents said they had felt unduly stressed at home. Over 73% of respondents said they had felt unduly stressed at work.

4 CAP371 as a target, not a facility

The CAP371 limit is 900 flying hours per annum. This does not include flight preparation, turn-around tasks, end-of-duty tasks, positioning, office work, etc. Many pilots claimed that their airline saw CAP371 more as a target than a backstop. A typical comment was: "The Captain is on leave tomorrow. He has done 893 flying hours in the past 365 days. He was utterly knackered and I felt I needed to be above my game to compensate." Over 13% of respondents said they had refused a duty in the past 12 months because of fatigue. Another theme that emerged was pilots' reluctance to put their own interests before those of their crew. Camaraderie has the effect of discouraging pilots from saying they are fatigued.[4] Also, pilots tend to have a 'can-do' attitude (which, when it comes to managing fatigue risk, is a problem).

5 Erosion of terms and conditions

Escalating training costs and downward pressure on salaries are impacting the financial position of some pilots. There are significant levels of indebtedness amongst trainees/new recruits. As one remarked: "Total training costs £118,000 (*ab initio* and two conversion courses). One conversion course of £23,000 paid back by airline over 5 years. Current debt left after repaying for just under 10 years = £62,000. Monthly payments to the bank of £1,050. About 5 years to go." There was a perception amongst some respondents that airline managements saw pilots as a 'necessary evil'. There was also a suspicion that cabin crew were being indoctrinated with the view that pilots were under-worked and over-paid. Pilot morale is not as high as it could be. Nearly 35% of respondents said the profession had not met their expectations, while 42.7% said they would not recommend a career in aviation to their offspring.

6 A pilot diaspora

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[3] Gambles, R., Lewis, S. and Rapoport, R. (2006) *The Myth of Work-Life Balance: The Challenge of Our Time for Men*, *Women and Societies*. Chichester: John Wiley and Sons.

[4] From a safety-assurance perspective camaraderie and team spirit are simultaneously a good and bad thing. Good, because they underpin CRM. Bad, because they may lead flight crew to overlook symptoms of fatigue.

Aviation is a volatile industry. Obliged to 'follow the work' pilots can find themselves commuting long distances. Over 30% of respondents took between 60 and 120 minutes to commute. Nearly 23% of respondents lived between 51-100 miles from base (meaning a car journey of at least one hour). 6.7% of respondents lived between 101-150 miles from base. Nearly 30% of respondents used temporary accommodation. One pilot commented "[I use temporary accommodation] because I can't commute 2,000 km on a daily basis." One solution to flight crew dislocation would be for airlines to provide accommodation. Over 81% of respondents confirmed that their airline did not provide accommodation. Over 83% confirmed that their airline would not subsidise hotel accommodation for fatigued crew returning to base. Driving home when fatigued is risky for the driver and other road users.

7 Work-life balance

To maintain one's physical and psychological health a balance must be struck between labour and homemaking/leisure. As the authors of *The Myth of Work-Life Balance* put it: "[T]ime and energy to connect with others and give and receive care ... are crucial for individual and societal well-being." Workplace demands intrude into pilots' home lives. Pilots who use temporary accommodation can spend a significant amount of time away from home. Over 95% of respondents said they spent time down-route. Over 52% said they spent 75 or more nights each year down-route. 43% said they had felt lonely or isolated when down-route. Over 40% of respondents said that relationships with partners/offspring had affected their working life. Nearly 20% said they had sought advice/help for a domestic relationship issue. Most had talked to a trusted colleague, non-work friend or the family doctor.

8 Industrial relations and trust

The data suggests a deterioration in industrial relations, both between pilots and management and, at British Airways in particular, between pilots and cabin crew. Several pilots talked about a 'bonus culture' amongst managers. One wrote: "[The industry] is in a gradual state of decline and managed by short-term bonus-grabbing people." Another wrote: "There is a downward trend in terms and conditions. Who is going to borrow £120,000 to become a pilot when they can only expect £15,000 per year on a temporary contract? Directors are bonus-driven, and don't care if the airline exists in five years time. The contempt shown to the profession by managers says it all." A test of pilots' confidence in management is their willingness to seek managers' help with work problems. Just over 13% of respondents said they had sought advice/help for a relationship issue with a work colleague. However, relatively few consulted a manager about the problem. Over 73% of pilots said their relationship with cabin crew had changed over time. Nearly 16% of respondents described their relationship with cabin crew when on duty as 'poor'.

9 Just culture?

A just culture is one of the building blocks of a safe airline. If pilots think they might be victimised they will be less inclined to report slips and errors. Non-reporting prevents organisational learning (learning from experience). Some questioned whether their airline maintained a just culture. One pilot said: "There is little or no protection for us. There is a culture of 'bullying' by the management ('How dare you be tired') and no protection afforded by the Civil Aviation Authority (who are in bed with the company – the Flight Operations Inspector 'cherry-picks' a bullet Orlando trip once a month to stay current)." Another said: "I have reported fairly innocent mistakes and it has been blown out of all proportion." In his book *Man-Made Disasters*[5] Professor Barry Turner argued that accidents, far from being bolts-from-the-blue, have a long genesis – something Turner called the 'incubation period'. Pilots' non-reporting of slips, errors and fatigue risk incubates incident and accident. A final

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[5] Turner, B. (1978) *Man-made Disasters*. London: Wykenham Science Press.

point: there may be a disconnect between an airline's explicit safety commitments (the Safety Case, for example, which recognises the need for a just culture and carries the CEO's signature) and what actually transpires. In short, there may be a disconnect between rhetoric and reality.

10 FRMS vulnerabilities

A fatigue risk management system (FRMS) enables operators to develop an FTL that balances the rest and recreation needs of flight crew with the company's operational requirements. Operators use qualitative data (like fatigue reports) and quantitative data (like Actiwatch print-outs) to maintain their FRMS. Data is the lifeblood of the system. Without data rosters cannot be validated. A non-validated roster creates a risk (because, unbeknown to managers, the roster pattern may increase rather than reduce pilot fatigue). Pilots won't file fatigue reports if they believe management will ignore those reports or if they fear they might be victimised. To function properly a FRMS requires a just culture and pilot buy-in. There was some evidence of pilots reporting sick when they were, in fact, fatigued. 'Masking' undermines FRMS.

11 Control parallelism

There is an 'inconsistency of control' at the heart of commercial aviation: while flight crew are responsible for the safety of their passengers, aircraft and crew, they often have little or no control over their rosters (which, as evidenced by the data contained in this report, can influence a flight crew's ability to fly their aircraft safely and efficiently). When it comes to roster planning, the locus of control rests firmly with back-office staff. This parallelism is problematic for two reasons. First, because it ignores a useful source of information on roster design: the pilots. Secondly because some pilots experience this parallelism as an affront to their professional status. ICAO sees preferential rostering as a means of involving pilots in roster design. Some workers are 'day people' while others are 'night people'. Preferential rostering provides a way both of shifting the locus of control more towards flight crew and of accommodating the physiological limitations of individual pilots. At the same time it involves pilots in the management of fatigue and, indeed, of the company, helping to break down the 'us-and-them' mentality.

12 Pilots *and* businesspeople?

Various airline managers have suggested that many pilots have second jobs. It has been intimated that pilots' second jobs help create a fatigue problem. Just over 3% of respondents said they ran a business from home. (Just over 7% confirmed that another household member ran a business from home). Of those pilots who ran a business from home, 71.5% devoted no more than 10 hours to it in a typical non-flying week. It is incorrect to claim that many pilots have second jobs.

13 Flight preparation as a stressor?

Over 28% of respondents felt they did not have enough resources to adequately prepare for their duty. Problems encountered included lack of time and inadequate information technology provision. Comments included: "We always need to come in early to cope with the deficiencies in I.T."; "A 45-minute report before pushback is not enough, especially for 4 sectors, as there is too much paperwork to wade through. I have frequently missed important NOTAM information. A 25-minute turnaround ... is not achievable safely, as it leads to rushed briefing and rushed pre-flight and rushed checklists." From a flight-safety perspective it is best to reduce the level of stress experienced by flight (and cabin) crew prior to operating.

14 Security checks as a stressor?

Over 95% of respondents said that current security measures were 'excessive'. No-one said they were too lax. Over three quarters of respondents were of the opinion that passing through security had compromised flight safety. Security checks that were perceived to be excessive acted to stress

flight crew. A typical comment was: "Being patronised and humiliated doesn't set you up in the right frame of mind for the day! Being deliberately pissed-off 10 minutes before you arrive at the aircraft is not the way to treat people you want to look after the reputation of the airline. Note, it's especially farcical and idiotic at home base – LHR." From a flight-safety perspective it is best to reduce the level of stress experienced by flight (and cabin) crew prior to operating.

15 Stress, fatigue, catharsis and closure

If troubled by stress or fatigue most respondents said they would confide in their partner. Few said they would confide in a manager. The following table ranks sources of advice and help in terms of their popularity amongst pilots (from the most popular at the top, to the least popular at the bottom):

Partner
Trusted colleague
Trusted non-work friend
Family G.P.
Fleet Manager
Aviation Medical Examiner
Other (for example, a psychologist)
Chief Pilot
Crewing Officer
Offspring
Rostering Manager
Operations Director
Personnel Director
Chief Executive Officer

Typical comments from respondents were: "I could not possibly contemplate talking to anyone in authority …. I have utterly no confidence that the matter would be dealt with properly. My poor wife bears the brunt of things. Her support is sometimes all that keeps me going."; "I feel that most people either don't understand or don't want to sympathise, so I don't raise it with anyone." There seemed to be a reluctance to broach the subjects of stress and fatigue with the AME, probably because s/he can influence a pilot's career. Pilots' reluctance to talk to managers could indicate one of two things. Either pilots feel that managers do not have the requisite skills (unlike, say, a psychologist) or they believe they might receive an unsympathetic response. One interviewee (who flew for a large U.K. regional airline) recounted how managers had told the crews not to use the 'F' word (Fatigue).

Conclusions

The aviation industry is not in the best of health, either in terms of pilot stress and fatigue, industrial relations or economic performance. As oil prices rise and competition intensifies the pressure to cut costs increases. Managers, incentivised by bonuses, trim budgets wherever they can. Aspiring pilots now bear the full costs of training. The resulting indebtedness impacts their quality of life. Under certain conditions, a pilot's economic status may have safety implications: for example, few newly-qualified pilots can afford to live close to a major hub. Consequently they may drive a considerable distance each day to get to work. Driving to and from work is tiring and stressful. It means getting up earlier and getting to bed later. It has been scientifically-proven that tired and stressed pilots are more error-prone.

Low pilot morale should give cause for concern. Only 19.2% of pilots said they would recommend a career in commercial aviation to their offspring. This finding should be of concern to all who value the industry. Most worrying, perhaps, is an apparent disconnect at some airlines between safety rhetoric and safety reality as it pertains to reporting. Pilots who feel threatened will think twice before reporting. Regulators need to look beyond compliance. They need to understand an airline's culture – how its employees *actually* behave – before they can judge its safety. Lord Cullen's[6] observations on the Piper Alpha disaster are apposite: "It is essential to create a corporate atmosphere or culture in which safety is understood to be, and is accepted as, the number one priority."

Finally, it is clear from the data that pilots' physical and psychological capacities vary. There is no singular pilot model. Rather, there are models. It is suggested that, as far as is reasonably practicable, regulators and airlines acknowledge human variability in FTLs and roster design. From a safety perspective the case for Fatigue Risk Management Systems, preferential rostering and other locally-owned risk-management tools is watertight – with the proviso that participating airlines maintain a just culture.

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[6] Cullen, D. (1990) *The Public Inquiry into the Piper Alpha Disaster*. London: HMSO.