Griffith Aviation

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Committee Secretary
Senate Standing Committee on Rural Affairs and Transport
PO Box 6100
Parliament House
CANBERRA ACT 2600
AUSTRALIA

Dear Secretary

I attach a submission from Griffith University to the 'Pilot Training and Airline Safety' Inquiry that was referred to the Committee by the Senate on 30 September 2010.

Griffith University has been offering programs in aviation for two decades and is recognised globally for its innovative approaches to aviation learning, teaching and research. Griffith Aviation has a range of partnerships with the aviation industry and tertiary institutions overseas. It is based at the Nathan Campus (about 10 km south of Brisbane CBD). The staff are recognised internationally as leaders in the industry and the program spans the full range of undergraduate and postgraduate academic qualifications for aviation professionals. A list of the program offerings is at Annex A. The Griffith Aviation student population is approaching 500 with further growth expected.

For Year 12 school leavers, there is strong demand for specialised employment focused degrees such as the three-year Bachelor of Aviation degree program coupled with the Graduate Diploma in Flight Management.   In this combined program, students undertake a full academic degree in aviation combined with flight practicums of approximately 200 hours, achieving well in excess of the theory and practical requirements for a CASA Commercial Pilot Licence.   The number of academically suitable applicants for these courses is now well above the places available with 17% more first preference bids being registered with the Queensland Tertiary Admission Centre for places in 2011 compared with 2010.

This year one hundred and sixty student pilots were enrolled and a similar number of enrolments are planned over the next two years. Griffith University now trains annually more than twice the number of pilots as the Australian Defence Force. This makes it one of the leading pilot training institutions in Australia with growing importance in the Asia Pacific Region. However, in meeting its obligations within the Australian Government policy framework, the University must ensure teaching and learning outcomes are not only those required by industry but also that the graduating students are highly skilled and adaptable to a dynamic national and international environment.

Griffith University: Submission to the Inquiry on Pilot Training and Airline Safety

Committee Members will be aware that in January 2010 the Asia Pacific Region was recognised as the largest air passenger and cargo region in the world. More than one quarter of the global passenger market of 2.2 billion people were carried in the region and this percentage is forecast by the International Air Transport Association (IATA) to grow rapidly to one third of world traffic by 2013.[1] All major international trade, tourism and aviation agencies and organisations, including the International Civil Aviation Organization (ICAO), forecast that global air traffic will double in the next fifteen years with the Asia Pacific Region being the major growth centre. The Australian Bureau of Infrastructure, Transport and Regional Economics (BITRE) estimates that the number of air passenger movements through Australia's major airports will increase from 98.1 million in 2008-09 to 205 million in 2028-29, 'more than doubling the number of passengers compared with the present time.'[2]

The increase in flight numbers and the fact that approximately 80% of all aviation accidents are attributed to human error[3] underlines the ICAO view that: 'the international community has a collective responsibility to attract and retain the "best and brightest" students who will become contributing members of the next generation of aviation professionals and to ensure they have access to quality and affordable aviation education and training.'[4] For that reason the Griffith University degree program for pilot trainees places significant emphasis on Human Factors and Threat and Error Management (at a level of understanding well above that required by current CASA licence requirements) and embeds these disciplines throughout the program.

A submission addressing the specific terms of reference for the inquiry is attached.

Several staff are willing to provide further advice to the committee should that be required. Please do not hesitate to contact me for details on those staff

Yours sincerely

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[1] International Air Transport Association (IATA): 'Remarks of Giovanni Bisignani at the Singapore Air Show Aviation Leadership Summit' on 1 February 2010. (www.iata.org/pressroom/speeches/Pages/2010-02-01-01.aspx)

[2] Australian Government: 'Flight Path to the Future – National Aviation Policy White Paper' December 2009, p32. (www.infrastructure.gov.au/aviation/nap/)

[3] Transport Canada: 'Aviation Safety Letter 2/2002' (URL: www.tc.gc.ca/eng/civilaviation/publications/tp185-2-02-367-2850.htm)

[4] ICAO Assembly – 37th Session, Technical Commission, Agenda Item 45: 'Next Generation of Aviation Professionals' (URL: www.icao.int/icao/en/assembl/a37/wp/wp064_en.pdf)

Griffith University welcomes the Senate Inquiry into Pilot Training and Airline Safety and provides the following comments against the Terms of Reference:

(a) pilot experience requirements and the consequence of any reduction in flight hour requirements on safety;

Griffith University strongly endorses competency-based training and assessment.

The Australian Qualifications Framework (AQF) sets the national standard of qualifications in the school, vocational education and training, and higher education sectors. Its central theme is a system of national accreditation of qualifications for approved training and education courses where relevant learning outcomes or competencies lead to a qualification.[5] In July 2009, the Civil Aviation Safety Authority (CASA) published an advisory publication on 'Competency Based Training and Assessment in the Aviation Environment'[6] building on previous work completed in 1999 under the national framework:

> *'Simply put, competency based training and assessment means that a person is trained and assessed to meet specified standards that define the skills, knowledge and behaviours required to safely and effectively "do a job". ... the cornerstone of a competency based training and assessment system is **rigorous and objective assessment of the trainee against valid standards.**'*[7]

Over the last decade the international aviation community through ICAO has been taking a competency based approach where competency is defined as a 'combination of skills, knowledge, and attitudes required to perform a task to the prescribed standard.'[8] Transport Canada points out that the traditional training approach based on hours tended 'to drive training toward meeting minimum requirements'[9] whereas competency based training leads to outcomes which are measurable, objective, valid, and sufficient in regard to their application in the workplace.

The majority of industry growth in Australia following World War II was built on former military pilots in the role of flying instructors as the mentors for pilot aspirants. The approach was very successful with the student acquiring the appropriate aircraft handling skills and knowledge. Following a Private Pilot Licence and a Commercial Pilot Licence, many graduates consolidated their experience by flying in single engine single pilot aircraft, sometimes in the bush, or private flying. Having gained the minimum experience specified by a particular operator, often without the benefit of appropriate supervision since graduating from pilot training, the now largely self

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5 Australian Qualifications Framework (AQF) Advisory Board (URL: www.aqf.edu.au)

6 Civil Aviation Safety Authority (CASA): 'Competency Based Training and Assessment in the Aviation Environment (CAAP 5.59A-1(0)' dated July 2009 (URL: www.casa.gov.au)

7 Civil Aviation Safety Authority (CASA): 'Competency Based Training and Assessment in the Aviation Environment (CAAP 5.59A-1(0)' dated July 2009 p6.

8 International Civil Aviation Organization: 'Annex 1 to the Convention on International Civil Aviation – Personnel Licensing' Tenth Edition July 2006 p1-1.

9 Transport Canada: 'Transitioning Regulatory Frameworks to Support Competency-Based Training and Assessment', Presentation to NGAP Symposium March 2010 (www.icao.int/NGAP/Presentations/).

taught pilot was considered 'suitable' for selection to fly in a high capacity multi-crew aircraft. The 'minimum experience' criterion varied widely from company to company and from time to time being 'market driven' by economic factors. Often it was expressed in hours experience, sometimes in hours as pilot-in-command and sometimes by calendar time as the number of Instrument Rating Renewal Tests (which are conducted annually).

Airlines managed a lack of competency in the large multi-crew aircraft by having procedures in place where a low-time first officer rarely touched the flying controls and took no actions unless specifically directed by the experienced Captain. The low-time first officer learnt their competencies to operate a high capacity aircraft on the job as their training up until then was based on very different learning outcomes. While this situation has changed in Australia with co-pilots now trained and trusted to take-off and land aircraft, the classic high power-distance gradient in the cockpit between Captain and co-pilot continues to exist in other parts of the world.

In contrast with the traditional approach, the industry needs pilots with the competencies to safely operate in multi-crew aircraft immediately following their type conversion. Boeing predicts the global airline industry will need an average of 23,300 new pilots (and 30,000 new engineers) per annum over the next 20 years and the 'challenge is adapting our training to engage the future generation of people who will fly and maintain the more than 30,000 [high capacity] airplanes that will be delivered by 2029.'[10]

Currrently, there is a mix of pilot entry approaches used by airlines around the world. Airlines such as British Airways, Cathay Pacific, KLM, Lufthansa and Singapore Airlines, for example, use cadet programs and 250 hour ex–cadet pilots in their heavy jet fleets. The forerunners to British Airways introduced their scheme in 1960 and, apart from periods of economic downturn, it has been operating in various forms since.[11] Other airlines introduce new pilots through strategies such as using them on regional fleets to gain experience or simply direct hiring 'experienced' pilots against specific recruitment criteria.

In comparison, Australia has dictated minimum experience requirements for airline pilots. However, with the growth of the industry, both actual and projected, Australian companies are now adopting recruitment and training practices that have been employed by globally respected airlines for many years. The British Airways cadet program sponsors young men and women to become pilots, who after appropriate

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[10] Boeing Aircraft Corporation: 'Boeing Projects Requirement for More Than One Million Pilots and Maintenance Personnel Over Next 20 Years' dated 15 September 2010 (http://boeing.mediaroom.com)

[11] The College of Air Training was formed in 1960 to meet a growing need for civilian pilots by British European Airways and British Overseas Airways Corporation which merged to form British Airways. The House of Commons Hansard of 6 May 1959 provides the background on its establishment. (URL: http://hansard.millbanksystems.com/commons/1959/may/06/college-of-air-training-hamble)

competency based training, are appointed as fully qualified first officers on company aircraft with a total flight experience of approximately 250 hours. Graduating cadets can be appointed to any aircraft type in the company fleet and it would be quite usual for a Boeing 747 or 777 aircraft flying into Australia to be crewed by a very low-time first officer.

In Australia, some recently introduced cadet schemes require the trainee pilot to pay for their training and to also spend a period of post–training building experience on smaller aircraft, often with different companies, prior to joining a major airline. Sometimes, this has meant future airline pilots working in very low-paying positions to accumulate hours. This results in a drain of young Australian pilots overseas to take advantage of international opportunities for low-time pilots rather than heading for the bush. Some overseas airlines are now offering minimal wage first officer positions on aircraft such as Boeing 737 or Airbus A320 for pilots with upwards of 500 hours. These positions are attractive as they allow the low-time pilot to build hours on a large commercial aircraft to eventually make them more competitive for a first world airline position.

In comparison with the traditional hours attainment approach, the competency training philosophy is based on the acquisition of appropriate training and skills for the environment in which pilots will be employed including the use of high fidelity simulators as part of the training regime. ICAO introduced the Multi-Crew Pilot Licence (MPL) concept in November 2006 based on competency units, competency elements and performance criteria where a pilot trainee are taught from the first day to operate in a multi-crew environment.

The training syllabus includes basic flying techniques, crew resource management, threat and error management, upset recovery training and the greater use of high fidelity simulators to provide realistic training (including emergency drills that cannot be safely carried out in the air). The ICAO Standard specifies a minimum of 240 hours of actual and simulated flying performing the functions of pilot flying and pilot non-flying. ICAO provides a very detailed model for Multi-Crew Pilot Licence (MPL) training in 'Procedures for Air Navigation Services - Training (Doc 9868)'. It describes the reason why the MPL was required:

> 'The MPL was established to respond to the growing demand in the aviation training community that felt that the current regulatory regime that dictated a large number of flying hours in solo and on a smaller aircraft was not the most efficient and safe way to train pilots for co-pilot duties on jet transport aircraft.
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> Further, there was some perceived negative training in the apprenticeship model that was first developed for flight training in the post second world war era. A number of training organizations and airlines were adamant that modern training techniques and research into the use of modern training devices such as flight simulation training devices needed to be recognized within the ICAO licensing structure. The ICAO Air Navigation Commission formed a Flight Crew Licensing and Training Panel to explore the options and opportunities to address the

shortcomings of some current licensing requirements. The competency-based concept and the MPL licence were the outcome of that panel's deliberations.'[12]

The MPL concept requires a number of elements to be in place. The first is the sponsorship of an airline as the training is geared to achieve specific aircraft type training with a need to transition to operational flying through an approved training system. The second is the aviation safety regulator having the necessary regulations in place and the capacity to oversight the airlines management of its training system as specified in its Operations Manual.

As at March 2010, twenty-two countries (including Australia, Canada, China, France, Germany, Singapore and United Kingdom) had adopted regulations to embrace the MPL concept with 66 pilots successfully graduating from the course and operationally flying and with more than 400 under training expected to graduate by late 2011.[13] There has been some criticism of this approach, for example some commentators have said that it is 'based on a knee jerk reaction to the global pilot shortage' or 'a cost saving measure by airlines', but the reality is that it is a quality management approach based on a needs analysis, definable objectives, and the evaluation of results to ensure that graduates are 'fit for purpose' as multi-crew pilots.

Currently, CASA measures pilot competency 'through theory and practical examinations to determine the level of a person's skills and knowledge following training and the accumulation of experience (i.e. hours) as well as medical examinations to assess a person's fitness to hold the licence.'[14] CASA is better placed to explain the various pathways, including the MPL qualifications, to become an airline pilot including the fact that there is nothing stopping an airline from using an appropriately qualified 250 hour pilot as a co-pilot on a high capacity aircraft as long as the airline has a CASA approved training methodology to appropriately manage safety. The fact that airlines in Australia have historically recruited pilots with considerably more hours in a different flying environment is beside the point.

The international aviation community, through initiatives such as the MPL, is following the policy requirements of most Governments, including Australia, to transition to competency based assessments rather than using quantitative measures such as hours attainment as the basis of assessment. The position of Transport Canada in relation to competency-based training follows:

> *'We want our students to recognize the conditions the real world will present to them and we want them to meet these conditions (or avoid them) with confidence and competence. ... The flight training and ground training elements will be interrelated and sequenced to provide for efficient achievement of learning*

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[12] ICAO: 'Frequently Asked Questions - Multi-Crew Pilot Licence'
(www.icao.int/icao/en/trivia/peltrgFAQ.htm#31)

[13] International Air Transport Association: 'MPL Global Progress Report' by Capt Dieter Harms at ICAO NGAP Symposium, March 2010
(http://www.icao.int/NGAP/Presentations/MPL%20Global%20Progress%20Report.pdf)

[14] CASA: 'Licences, Ratings and More'
(www.casa.gov.au/scripts/nc.dll?WCMS:STANDARDS::pc=PC_90022)

objectives. We'll set our objectives in the cognitive, psychomotor and affective domains. ... How many hours will this take? It will take all the ground and flight and simulation hours needed to ensure that competency is reached.[15]

There is no empirical data to support the view that appropriately trained low time pilots in the air transport sector are an increased safety risk. Low time pilots are not intrinsically unsafe in the same way that high time pilots are not intrinsically safe. The conduct of a safe flight in a multi-crew environment depends on the collective competencies and interactive human factors in the cockpit rather than meeting a specific hours quota that has been possibly gained in a dissimilar flying environment such as target towing, survey work, parachuting activities, and single pilot operations in remote localities. Competency training regimes, such as airline cadet programs and the MPL, provide appropriately trained and qualified first officers for the air transport industry.

(b) the United States of America's Federal Aviation Administration Extension Act of 2010 which requires a minimum of 1,500 flight hours before a pilot is able to operate on regular public transport services and whether a similar mandatory requirement should be applied in Australia;

In relation to the subject of the Inquiry, the US Congress Public Law 111-216 of August 1, 2010 puts into effect a range of measures to improve airline safety and pilot training. The changes are a package of initiatives designed to improve aviation safety with the one under discussion being a requirement for all airline pilots to have a minimum of 1,500 hours flight experience. There is also a provision for the FAA Administrator to recognise credit for specific academic training courses to reduce the 1,500 hours break point. Statute Sec 217(b)(2) recognises the various pathways to becoming a high capacity pilot when it states that to hold an Air Transport Pilot Licence individuals must 'have received flight training, academic training, or operational experience' that will prepare a pilot to function effectively in a multi-crew environment, in adverse weather (including icing), and in high altitude operations while adhering to the highest professional standards in the air carrier operational environment.

The FAA Administrator has been given up to three years to put the law into effect including deciding what credits would be granted through 'specific **academic training courses** [that] will enhance safety more than requiring the pilot to fully comply with the flight hours requirement.'[16] Until now in the United States new first officers are considered for employment in a high capacity airline with about 750 flying hours if they had completed a flying training course coupled with an approved **aviation tertiary degree**. Some smaller airlines have required significantly fewer hours.

Randy Babbit, the FAA Administrator, when he appeared before the House Committee examining the Bill, in discussing the crew training requirements said:

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[15] Transport Canada: 'Transitioning Regulatory Frameworks to Support Competency-Based Training and Assessment', Presentation to NGAP Symposium March 2010 (www.icao.int/NGAP/Presentations).

[16] US Congress Public Law 111-216 of August 1, 2010 Statute (Sec 217(b)(2)(d))

'I know some people are suggesting that simply increasing the minimum number of hours required for a pilot to fly in commercial aviation is appropriate. As I have stated repeatedly, I do not believe that simply raising quantity – the total number of hours of flying time or experience – without regard to the quality and nature of that time and experience – is an appropriate method by which to improve a pilot's proficiency in commercial operations.'[17]

In accordance with a provision in the Bill that was approved by Congress, the FAA has constituted a Task Force on Air Carrier Safety and Pilot Training to provide advice to the FAA Administrator on a range of issues including the 1,500 hours requirement. Recent press reports indicate that the Task Force is recommending a minimum of 500 flying hours for a co-pilot when associated with an approved academic training course. No final decision has yet been made by the FAA Administrator. Alternatively, the FAA could embrace the international practices regarding cadetships and/or introduce the ICAO published MPL using a 240 flight and simulator hour minimum standard rather than having a unique United States approach.

The Regional Airline Association, which represents more than 31 regional airlines operating more than 50% of the commercial flights in United States, makes the point that:

'... the hours experience level of an airline first officer has never been cited as a causal or contributing factor in any Part 121 [high capacity] operator accident. Total time may provide optical "cover" but it fails to address the most common causes of accidents – i.e. complacency, lack of professionalism, non-adherence to standards, loss of situation awareness, and inappropriate reaction to unexpected events.'[18]

It is perhaps significant that in regard to the Colgan Air accident in February 2009 that precipitated the changes in the United States, both pilots had well in excess of 1,500 hours experience.

It should also be mentioned that most defence forces, including Australia, use competency-based training. This type of training allows low time pilots to be operating sophisticated aircraft in routine and tactical situations safely. It is not unusual in the military for a recent graduate to be flying a high performance single pilot aircraft such as an F/A-18 fighter in a challenging flying environment. The RAAF VIP squadron uses low time pilots in large multi-crew aircraft similar to airliners. No 33 Squadron, based in Canberra, operates Boeing 737 aircraft and its co-pilots are often drawn from recent pilot course graduates. This means that low time pilots are deemed suitable to pilot aircraft with passengers who fill sensitive national positions such as the Prime Minister.

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[17] FAA (Feb 4, 2010): 'Testimony – Statement of J. Randolph Babbit' before the House Committee on Transportation and Infrastructure, Sub-Committee on Aviation on: Update: The Agency's Call to Action of Airline Safety and Pilot Training
(www.faa.gov/news/testimony/news_story.cfm?newsId=11146)

[18] RAA (April 9, 2010): ANPRM, New Pilot Certification Requirement for Air Carrier Operations

The Committee in answering the question on whether a pilot requires a minimum of 1,500 flight hours before being able to operate a regular public transport aircraft is asked to note that the US Statute does not unconditionally set a baseline requirement of 1,500 hours. If offers relief in the form of credits for **specific academic training courses** that will enhance safety more than requiring the pilot to fully comply with the flight hours requirement. Griffith University strongly contends that appropriately designed and delivered tertiary aviation courses based on competency provide a legitimate safety benefit that should be recognised in any discussion on pilot entry requirements to the industry.

(c) current industry practices to recruit pilots, including pay-for-training schemes and the impact such schemes may have on safety;

There are several pathways a pilot can follow to train and gain employment with an airline including flying training only, flying training in conjunction with a tertiary degree (covering topics such as human factors, threat and error management, international civil aviation, etc) and, for the future, MPL training. Regardless of the pathway, all pilots must meet regulated minimum standards and under the CASA approved company procedures meet initial, recurrent and recency requirements. While each of the pathways may suit individual skill sets or circumstances, all of them have the potential to produce operationally effective and safe pilots.

Turning to the pay-for-training schemes, these schemes are now common and attractive to airlines in an environment where:

- there is an over-supply of qualified flight crew;

- there is a limited number of flight crew positions;

- overheads associated with training (human resources, facilities, simulator hire, administrative and travel costs etc) are expensive; and

- sector competition is high meaning that there is significant pressure to keep costs minimised and profits maximised.

The practice involves airlines placing a condition on an offer of employment that is subject to the applicant's successful completion of a type rating endorsement on the aircraft type operated by the airline. The applicant is required to engage a third party training provider, but invariably **at their own cost.** On gaining the qualification, the airline then subjects the applicant to a flight simulator assessment to ensure they have attained the appropriate the skills and knowledge.

Obviously, the targets are pilots who hold a commercial pilot licence, command multi-engine instrument rating (and/or flight instructor rating) and limited work experience. These pilots are often referred to in the industry as 'low time' pilots. This term differentiates them from very experienced pilots and those who previously entered high capacity aircraft operations with many hours experience beyond the minimum required. Possibly, the low time pilot may be attracted to work under different pay and conditions when compared with longer-term employees. In this case, the reward may be gaining experience in a multi-crew environment and building the hours necessary to hold an Air Transport Pilot Licence to transition to Captain.

More recently, possibly due to problems with leakage to larger airlines and the forecast pilot shortage, cadetships have re-emerged as a primary employment strategy by airlines to 'grow' their own pilots. Cadetships are a very effective recruitment strategy when there is an under supply of pilots with the appropriate skill sets and required flying hours. In Australia, applicants are selected by airlines through an assessment process.[19] Successful applicants are offered a self-funded cadetship that includes training from ab-initio flying to a Commercial Pilot Licence. Trainees who successfully complete the program are likely to be offered a position with the operator with the terms and conditions of employment varying between airlines. Another approach has been for new pilots to be charged for any initial training provided by their employer to make them effective operational pilots.

The concept of 'self-funded' training is strongly debated in the industry with a variety of approaches taken by employers. Some airlines absorb the costs, some allow successful candidates to repay their 'self-funded' training costs through salary foregone or other arrangements, while others refute the principle that they should be involved in specific employment training in any form including payment or reimbursement of training costs.

The looming pilot shortage may change the employment dynamics in the medium term. While the competitive market will mean that airlines will need to continue to closely manage input costs, the critical nature of pilot numbers may change labour practices. Airlines may need to more carefully manage the pilot resource and have positive programs to encourage retention. There will be a need to have effective recruitment strategies, including cadetships, with the larger airlines needing to ensure supply through strategic partnerships with reputable aviation education and training providers such as major flight schools and universities offering established pilot programs.

In relation to current industry practices to recruit pilots, including pay-for-training schemes and the impact such schemes may have on safety, the committee is asked to note that there are various training and experience pathways to enter the industry as an airline pilot. While each of the pathways may suit individual skill sets or circumstances, the individuals undertaking an academic route will have demonstrated their potential to achieve success in a broad range of aviation and management disciplines that will greatly contribute to safety and intellectual rigour. In regard to the source of funding for type training, all pilots need to meet minimum standards and there is no direct linkage between the funding source for training and safety.

(d) retention of experienced pilots;

Over the past thirty years, the community of experienced pilots has remained resilient, flexible and mobile. While there are many aspirational flying roles in the

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[19] Refer to 'Rex Cadet Scheme' (www.rex.com.au/cadetpilot/cadet_faq.pdf) & Aviation Business Asia Pacific: 'Jetstar launches cadet pilot training program' June 2010 (www.aviationbusiness.com.au/news/jetstar-launches-cadet-pilot-training-program)

aviation industry, Australian pilots predominantly aim for career pathways with an airline.[20]

In the past, pilots have been motivated by a passion for flying, the need to gain the minimum hours to permit entry to the air transport sector, the need to establish a clearly defined career trajectory with an airline, the perceived social and tangible benefits of attaining such a role, and the need to re-pay flight training loans. This means that pilots are prepared to move to work in their chosen industry provided that the financial benefits are sufficient given the circumstances.

In the aftermath of a number of significant events in the last decade, (including the collapse of Ansett, the terrorist attacks of 11 September 2001, the global financial crisis, and the growing economies of China, India and Indonesia) the industry has been adapting to a dynamic environment. A growing but competitive industry has emerged, including one where low cost carriers and their price-sensitive passengers have a greater market share. The need to contain input costs and the ready supply of pilots has placed considerable downward pressure on the pay and conditions of pilots until recently. In Australia, some senior airline executives have argued that there remains a need for local airlines to remain competitive in the broader Asia-Pacific context.[21]

As the anticipated pilot shortage begins to bite, pilot retention should be considered a 'whole of industry' problem. The leakage of pilots from general aviation operators and the smaller airlines up the airline hierarchy is reducing the pool of highly qualified and experienced pilots for these sectors. It has operational and training implications and places a considerable cost burden on the areas of the industry that can least afford it.

The flying training industry is no exception. The demand for airline pilots has meant that the relatively low-paid flying instructor community has become largely transient as recently graduated pilots are using this role as a stepping stone to build their flying hours and join an airline. Noting that many flying instructors are newly trained pilots themselves, there may be an associated risk with the instructor pool having lower experience levels. This issue can only be addressed by increasing the professional appeal of the instructor role including appropriate accreditation for commercial pilot training (as occurs in the United Kingdom) and improving financial compensation to ensure the retention of suitably qualified and experienced individuals.

On the retention of experienced pilots the Committee is asked to note that general aviation operators and small airlines are having major pilot retention problems and are carrying much of the training load for the larger airlines at considerable cost. The flying instruction industry is similarly placed with this discipline being largely dependent on transient low hour pilots. The question of pilot retention should be considered a 'whole of industry' problem.

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[20]   DITRDLG (2007): 'General Aviation Industry Action Agenda', Issues Paper (URL: www.infrastructure.gov.au/aviation/general/GA_Issues_paper.pdf and www.infrastructure.gov.au/aviation/general/GA_Action_Agenda_Report_v1.2.pdf)

[21]   Schulte, P & Zhu, Y (2005): 'Globalisation and Labour Relations in Australian Airlines Industry: A Case Study of Pilot Experience' The University of Melbourne (http://airaanz.econ.usyd.edu.au/papers/schulte_Zhu.pdf)

(e) type rating and recurrent training for pilots;

According to Civil Aviation Regulation (1988) 217, an operator of a regular public transport service, an operator of any aircraft with a maximum take-of weight exceeding 5,700 kilograms and any other operator that CASA specifies shall provide a training and checking organisation so as to 'ensure that members of the operator's operating crews maintain their competency'.[22] This Regulation requires operators to ensure the provision of at least two checks per calendar year to test the competency of the operating crews. This regulation clearly specifies that the training and checking organisation and the tests and checks provided within it, shall be subject to the approval of CASA.

Civil Aviation Orders Section 82.0 specifies the requirements for the issue of Air Operator's Certificates (AOC) for the 'Other than High Capacity Aircraft' and the 'High Capacity Aircraft' categories including the description of the training and checking requirements in an Appendix.

The Civil Aviation Orders provide significant detail in regard to flight crew qualifications and training, particularly with regard to type endorsements[23] and recency[24] requirements. CASA has the role of ensuring that these requirements are being met. However, while CASA's has the responsibility to approve training systems and oversight their administration, the operators cannot shirk their primary responsibility in appropriately managing their safety risks.[25]

Over the last twenty years the concept of Safety Management Systems has emerged as a safety risk mitigator. A recent amendment to the legislation now imposes a requirement on regular public transport operators to 'establish and maintain an appropriate organisation, with a sound and effective management structure that uses a safety management system approved by CASA'.[26]

A fully integrated Safety Management System is required, including an Operations Manual fully describing the process to identify the training gaps of individual pilots entering the organisation and their recurrent training needs. There is a need for airlines to ensure that pilots are not only meeting an appropriate standard of technical training but also professionally developing pilots for higher responsibilities either within the pilot specialisation or broader management fields. All airlines should actively encourage pilots to continue to build their professional qualifications including through aviation, management and other relevant courses at academic institutions.

On the question on type rating and recurrent training for pilots the Committee is asked to note that the primary responsibility for the management of these aspects rests with the airlines appropriately regulated by CASA. As employers, airlines have

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[22] CAR 217: 'Training and Checking Organisation' p115.
[23] CAO 40.1.0 (Aircraft endorsements – aeroplanes) Appendix III/V
[24] CAO 40.1.5 (Conditions on Air Transport (Aeroplane) Licence
[25] Reason, J. (2006): 'Managing the Risks of Organizational Accidents', Ashgate, England
[26] CAO 82.5 Subclause 2: 'Obligations in relation to organisation and facilities', p2.

the responsibility to technically and professionally develop their staff including sponsoring attendance on appropriate academic courses.

(f) the capacity of the Civil Aviation Safety Authority to appropriately oversee and update safety regulations given the ongoing and rapid development of new technologies and skills shortages in the aviation sector;

The Committee in answering this question is asked to note that Griffith University supports any measures that would improve the development and promulgation of timely, outcome-based safety regulations especially in relation to new technologies.

The US Department of Transportation constituted a 'Future of Aviation Advisory Committee'. Although the US system has differences, it does provide a model for how other Governments are attempting to handle policy challenges on a whole of Government basis. The committee provides information, advice and recommends to the Secretary of Transportation an industry view of evolving aviation transportation needs, challenges, and opportunities of the global economy. The committee provides advice on matters such as **balancing the industry's competitiveness and viability, ensuring a world class workforce** necessary for a robust aviation industry, **securing stable and sufficient funding** for the aviation system, **addressing environmental challenges**, and **ensuring safety in aviation**. The FAA Administrator attends the meetings. More details are available at http://www.dot.gov/faac/charter.html.

(g) the need to provide legislative immunity to pilots and other flight crew who report on safety matters and whether the United States and European approaches would be appropriate in the Australian aviation environment;

Griffith University supports the principle of positive reporting systems where people are encouraged on a non-punitive basis to report accidents and incidents even though it may entail divulging their own errors. Professor James Reason, the oft-quoted authority in organisational risk management, believes that successful reporting systems are comprised of five factors:

- Indemnity against disciplinary proceedings – as far as it is practicable.

- Confidentiality or de-identification.

- The separation of the agency or department collecting and analyzing the reports from those bodies with the authority to institute disciplinary proceedings and impose sanctions.

- Rapid, useful, accessible and intelligible feedback to the reporting community.

- Ease of making the report.'[27]

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[27] Reason, Professor James (1997): 'Managing the Risks of Organizational Accidents' Ashgate Publishing Ltd, Aldershot, England, p197.

The approach incorporates the principle of 'just culture' where people are encouraged to report as part of a learning organisation but any legislation contemplated by the Committee would need to ensure that it balanced the circumstances where a person is reckless, takes a deliberate and unjustifiable risk, or performs a negligent act.

(h) reporting of incidents to aviation authorities by pilots, crew and operators and the handling of those reports by the authorities, including the following incidents:

    (i) the Jetstar incident at Melbourne airport on 21 June 2007, and
    (ii) the Tiger Airways incident, en route from Mackay to Melbourne, on 18 May 2009;

No comment.

(i) how reporting processes can be strengthened to improve safety and related training, including consideration of the Transport Safety Investigation Amendment (Incident Reports) Bill 2010; and

No comment.

(j) any other related matters.

Annex:

A. Griffith University Aviation Course Offerings

ANNEX A

GRIFFITH UNIVERSITY AVIATION COURSE OFFERINGS

- **Bachelor of Aviation.** A three year degree program for professional pilot aspirants with the number of annual entrants increasing from 34 in 2002 to 160 in 2010 with 6 to 8% being international students.

- **Graduate Diploma in Flight Management.** This course is only available to students enrolled in the Bachelor of Aviation program and provides practical and theoretical elements of pilot education and flying training. The graduation standard meets and exceeds the CASA Commercial Pilot Licence and instrument rating standards. Students also undertake extensive professional development, including teamwork and leadership. Graduates will have attained a minimum of 200 hours of aeronautical experience. Eligible students may qualify for financial assistance under the Federal Government FEE HELP scheme. .

- **Bachelor of Aviation Management.** This three year program, which was launched in 2010, is aimed at the students who want to gain professional positions in the aviation industry in other than a pilot role. The program was soft launched in 2010 and is expected to grow to 50 entrants in 2012.

- **Post Graduate Certificate in Aviation Management.** This one year full time program offers a qualification through coursework for tertiary qualified entrants or experienced aviation professionals with suitable professional qualifications. The annual enrolment is approximately 15 students with about half being international students.

- **Master of Aviation Management.** This one year full time program offers a qualification through coursework and a major assignment for tertiary qualified entrants or experienced aviation professionals with suitable professional qualifications. The annual enrolments are in the 30 to 35 range with about half being international students.

- **Graduate Certificate in Flight Deck Management.** This course is to commence in 2011 (subject to approval) and will offer industry pilots an alternative pathway to a type conversion to a modern jet airline aircraft, whilst gaining a formal vocational and tertiary qualifications in contemporary aviation safety related areas, including human factors, multi–crew operations and non–technical skills.

- **Doctor of Philosophy by Research or Publication.** Currently, there are 11 people from the aviation industry undertaking a Doctorate of Philosophy by Research qualification in aviation related topics. The Aerospace Strategic Studies Centre, which is a component of Griffith Aviation, oversights the candidates and is currently exploring further research opportunities based on government and industry partnerships informed by industry needs and funded by grants or commercial entities.