



GPO Box U1987 Perth  
Western Australia 6845

TELEPHONE +61 8 9266 7192  
FACSIMILE +61 8 9266 2377

The Secretary  
Joint Committee of Public Accounts and Audit  
Review of Australia's Quarantine Function  
Parliament House  
CANBERRA ACT 2600

To the Joint Committee of Public Accounts and Audit,

I would like to thank this committee for the giving me the opportunity to make a submission on the topic of 'Aviation Security Within Australia'. To introduce myself, I am Dr John Flexman, currently coordinator of a new course in Security Technology being offered for the first time at Curtin University of Technology (CUT) in 2004. Prior to my appointment at CUT I was research manager for a company called QRSciences based in Perth, Western Australia, where I spent six years developing NQR based explosive detection technology. During that time I had the opportunity to tour several overseas facilities and see first hand the application of security technology in an aviation environment. QRSciences are currently working with several large US companies to introduce this technology into future aviation security devices.

In considering the seven items detailed in the terms of reference I would like to address issues of:

- d) The impact of overseas security requirements on Australian aviation security.
- e) Cost imposts of security upgrades, particularly for regional airports.
- f) Privacy implications of greater security measures.
- g) Opportunities to enhance security measures presented by current and emerging technologies.

**d) The impact of overseas security requirements on Australian aviation security.**

While it could be argued that Australia needs to develop its own standards in terms of aviation security we must be aware of the implications these standards will have on other nations where international flights are concerned. This is particularly important when considering the future implications of flying to the US where compliance with particular security standards maybe strictly enforced on all aircraft whose destinations lie within their border. No doubt other nations are also likely to follow suite in this regard. In many ways I believe we should regard this enforcement as a positive and embrace this approach because it will clearly lead to higher levels of air safety. We should also consider the converse situation i.e. should we be prepared to accept flights from places that have low or no security.



Clearly, international travel is a global issue and security goals, regulations and standards should ideally be set on this scale. As a nation we must also appreciate that considerable amounts of work have already been done overseas in the field of aviation security and we should be prepared to learn from their efforts. There is however the question of which international security model to adopt. For example, the European approach differs in several important aspects from that designated in the US. An important issue, which impedes progress in determining security solutions, is that obtaining access to this international information is currently a difficult and time-consuming process. Streamlining communication processes and developing closer ties with other national agencies such as the TSA should be a goal of any Australian aviation security agency. Australia needs to be more closely integrated into the international security community; becoming part of a network of approved partners in aviation security may assist in this effort.

If we as a country agree to the security standards now being suggested overseas, the next question is whether these standards should also apply to domestic routes. It is probably reasonable to require different standards of security for international and domestic flights. However, a comprehensive evaluation of the risks for domestic and international travel and the potential issues for passengers in transit should be considered.

#### **e) Cost imposts of security upgrades, particularly for regional airports.**

Developing a strategy to optimally use our resources to protect major and regional airports systems is another key aspect to defending our aviation industry. The saying that ‘a chain is only as strong as its weakest link’ seems quite apt when considering this problem. There seems little point is investing substantial resources in defending our major domestic and international terminals and doing nothing at our smaller airports.

Some inexpensive methods of enhancing security at regional airports might be to:

- Reduce the number and types of and objects permitted onto aircraft, particularly for carry-on luggage i.e. make it easier to assess the security threat of boarding passengers. This could be accomplished by imposing stricter regulations on what or how much can be carried. Alternately, it could be encouraged by streamlining the processing of travellers carrying luggage defined as small or easy to scan/search.
- Increase the levels of random inspections carried out at regional airports. Often throughput is not as important an issue at regional centres giving more time to implement these checks; it is also possible to require passengers to check –in earlier before flights.
- Use of centralized facilities via secure communication links to accommodate passenger profiling and baggage tracking issues.
- Since lower throughput rates may be quite acceptable in these environments it may also be possible to accommodate smaller, slower and lower cost technology with higher false alarm rates.

Some guidance for these issues could again be achieved by communicating with other nations who have had to address similar issues. For example the ARGUS project in US defined specific criteria for smaller, lower cost and slower x-ray scanners to be used in smaller regional airports.

If one examines the impact that major airline disasters have had on the airline industry and even the global economy one can determine the importance and value of investing in airline security. Particularly, since it is now clear that not only is the passenger and crew at risk but also ground side targets as well. A balanced approach would be to share the monetary burden between government, airlines and passengers. I believe that if people knew exactly where and why the money had to be spent, and were satisfied that they had achieved peace of mind from this investment then it would be viewed as money well spent. This is similar in many ways to the fact that people are currently happy to insure themselves, their belongings and their health.

Perhaps though we should not only look at the cost side of the equation. As has been discussed by contribution from other submissions like CSIRO there is a lot of potential to develop science and technology within Australia to protect our neighbours and us. Considering the unilateral need for security solutions this work is likely to have a very positive impact on our GDP. I am aware of a number of research outlets both commercial and in academia where appropriate seeding of funds could reap large benefits in the future.

#### **f) Privacy implications of greater security measures.**

Technologies such as the microwave, x-ray backscatter body images appear to be very effective against metallic and non-metallic targets yet these technologies have been slow to gain acceptance. The issue for these technologies is that they are in some ways too effective. There would appear to be no reason why the issues of privacy for these types of technologies cannot be successfully resolved and it is a pity that the initial publicity encountered by these technologies was so negative. Clearly, there are opportunities to be had in the development of software and protocols that can allow these very capable technologies to perform their function while regulating the privacy issue. This could be accomplished through for example through effective image mapping and automation of the identification process. Similarly, passenger-profiling methodologies have come under protest from civil libertarians.

What is perhaps surprising is that these questions were not identified and addressed earlier on in the development of these technologies. I think this demonstrates that the security experts of tomorrow need training not only in their area of specialization but also in law, ethics and politics involved in applying any intrusive technology. While employer surveys generally indicate overall satisfaction with the technical skills of science and engineering graduates they also identify an inability of these graduates to take the big picture into account and to communicate effectively with less technically inclined persons. This is an area we are very mindful of in the development of our security course at Curtin University.

On a related note, another very successfully deployed technology now being widely deployed is TIP Threat Image Projection. This raises issues not with privacy of the passenger but the rights of the employees who find their performance is being constantly assessed. It is important that these issues are adequately addressed to allow these innovative solutions to be part of tomorrow's security arsenal.

**g) Opportunities to enhance security measures presented by current and emerging technologies.**

There is not a shortage of new or emerging technologies that can be usefully applied to airline security. The skill is in achieving the correct choice and balance in a particular situation. Defending Australian skies requires an internationally integrated approach from a team of multi-skilled professionals. Without such expertise the people charged with the responsibility of providing airlines and other critical infrastructure in Australia and other parts of the world with security solutions are ‘flying blind’.

I believe a panel of expert from a wide range of fields including the Department of Transport should be established to evaluate the best choices for different airport environments and to review their choices on a regular basis. Being mindful that the best solution today may not look so attractive in say five or ten years time with the likely entry of several new and valuable technologies on to the market in the near future. It is particularly important that these professionals are able to attend important meetings and conferences because it is at these meetings that the merits and drawbacks of these technologies and the development of up and coming products are discussed on a formal and informal level. Some of the tasks of this committee might be to consider: a) effective standards and means of regulating them, b) the ethics and politics, c) the cost, d) the inconvenience, e) the practicality and f) the effectiveness.

Also, in the security field the issue is often not whether the technology can identify an illicit object in isolation but whether it is able to rapidly discriminating that object from other objects that give a similar response, often in a practical environment this may result in the article passing through undetected for reasons of expediency. After September 11<sup>th</sup> 2001 the news was full of stories of people that had managed to deceive a security systems in some way. This leads one to believe that simply meeting some particular detection standard under controlled conditions is not sufficient in order to maintain an effective defence. A significant part of any strategy to implement improvements to airport security in Australia must address the issues of on-site qualification and validation of performance at regular intervals.

Another, important topic in security technology is the value of using “data fusion” which collects and evaluates data from multiple sensor systems. This approach is being adopted to take into account the fact that every technology has its good and bad points. It is well known that current technology suffers from detection failures especially when dealing with real world luggage and situations; multi-parameter measurements would tend to reduce the possibility of artful deception. Currently, there is a lot of interest in the use of combined technologies. This can be particularly valuable when two or more technologies can be found that have complimentary strengths and weaknesses. It may turn out that a combination of lower cost technologies correctly integrated will provide more effective protection than some of the very expensive single technologies being canvassed today as the best current solution.

Finally, I would like to commend recent government funding initiatives in the areas of homeland defence. These initiatives will not an only yield benefit in terms of the research but also in it’s potential to develop a growing body of people within Australia with greater awareness of security issues. I would also like to commend my current employer Curtin University who has recognized the need both nationally and internationally for scientifically trained professionals in this area. This being an area in which development of the necessary skills and understanding has to date been rather haphazard or non-existent. We believe that these graduates will provide strong leadership to deal with many of these issues for future generations.

Best Wishes

Dr John Flexman. (Course Co-coordinator Security Technology Curtin University)

Copies to:

Carter, John Gordon (REPS)	Joint Committee of Public Accounts and Audit 'Aviation Security Within Australia'.
Lee, Peter (Professor)	Executive Dean of Engineering, Science and Computing, Curtin University of Technology.
Ward, Jo (Professor)	Dean of Science Faculty, Curtin University of Technology.
Loss, Robert (Doctor)	Head of Department of Applied Physics, Curtin University of Technology.
Russeth, Kevin	Chief Executive Officer, QRSciences Perth, Western Australia.