30 March 2012

To the Committee Secretary of the Senate Standing Committees on Rural and Regional Affairs and Transport:

As an academic who studies the structure and behavior of terrorist organisations, I write with concern regarding the recently tabled Aviation Transport Security Amendment (Screening) Bill 2012. The bill, which enables the introduction of mandatory full body scans, risks being expensive without actually making Australia any safer. Since other submissions have made many other criticisms of and suggestions for the bill, I have attached concerns below that may be substantially different from other submissions.

Executive Summary

- The government's own documents do not support the claimed effectiveness of full body scanners in securing airport checkpoints.

- Use of full body scanners may increase the ability of terrorists to get materials dangerous to aviation through the security checkpoints.

- Introduction of full body scanners may make Australian airports more attractive targets for terrorists.

- The government's plans for mandatory use of the full body scanners does not make sense as a security procedure, let alone from a privacy standpoint.

- Terrorists who truly pose a threat to aviation will only be stopped in the long run by more effective police and intelligence work before they ever reach the airport, and an unwarranted focus of resources and attention on the physical security regimen at the checkpoint detracts from improving overall security.

Scanner Effectiveness

The Government refers to the United States, Canada and other countries' adoption of full-body scanners as a reason to adopt full-body scanners as well, to bring them in line with the 'improved' security in peer countries. The Government provides no evidence that use of these scanners has actually improved security in those countries. The Government in its submission to the House inquiry provides no independent evidence for the effectiveness of the scanners, stating merely that there was no need to "test and measure the effectiveness of the technology for aviation security screening, as this technology is proven and already in use." (p. 20) This is an assertion, and given that a number of countries either do not use the scanners (such as Israel) or have given up on them as ineffective (such as Germany), a tendentious one at that. The statement also fails as a matter of logic: simply because a technology is already in use does not mean it is proven effective. The Australian Airline Pilots' Association submission to the House inquiry lays out some of the evidence found about how easy it is for competent individuals to defeat the scanners, so I will not go over it here.

The Government provides no information on the percentage of false negatives from full body scanners (nor, given how it tested the machines in Sydney and Melbourne, would it have any way of knowing the percentage of false negatives from those tests).

Having to resolve alarms on 43% of passengers screened, as stated in the Government's submission to the House inquiry, is not good at all. What it essentially means is that screeners could be nearly as effective by flipping a coin in terms of deciding on who should receive extra scrutiny after going through a scanner. In fact, a coin flip would be *more* effective because it would have some chance of catching false negatives as well.

The supplementary submission provided by the Department of Infrastructure and Transport to the House inquiry claims that the scanners detect "ceramic knives, improvised explosive devices with no metallic components, and liquids and gels." More accurately, the full body scanners proposed for use by the Government do not actually detect metal, nor do they detect explosives per se. Rather, they detect and then show on an idealized body outline the differentials in density, shape, and moisture (or more specifically, the radio wave reflectivity) among what is presumed by the ATR software to be the body, other objects next to the body, and clothing (which is supposed to appear invisible to the machines because the radio waves are supposed to pass through it – given the false positives of non-divestible objects, clearly this is not always the case). Terrorists will as a result find it *easier* to get dangerous items through the security checkpoint, since they are more easily able to modify the density, shape, and moisture of dangerous objects rather than the materials the objects are made of. Precisely because the machines detect density, shape, and moisture that differ from a presumed human body, it is possible for terrorists to iteratively test the machines' detection algorithms and the limits of their capabilities with non-dangerous (and possibly non-suspicious) dummy objects. This is to say nothing of objects concealed in body cavities.

The Government touts the effectiveness of the machines in finding items not found by metal detectors in its Sydney and Melbourne trials. Given that the use of the scanners in these tests were opt-in, the passengers who went through them were by definition not deliberately attempting to conceal anything, so the information that the scanners found items that were not actually being concealed is not particularly useful. In addition, the question is not whether the full body scanners can find objects that would not be picked up by the metal detectors – it is whether they can find *dangerous* objects that are actively being concealed by dangerous people. This is a separate question. The high alarming rate for non-divestible items, such as pants pockets and zippers, does not speak well of the ATR software, and provides an opportunity for terrorists, who can iteratively test the machine, and then purposefully trigger the alarms in ways that will cause routinised resolution pat downs by bored screeners habituated to false positives.

Full body scanners represent a category error in aviation security. Given changed counter-hijacking procedures after 9/11, the primary terrorist threat to the integrity of airplanes comes from explosives. Even the ceramic knives discussed by the Government in its submission are no longer particularly useful to terrorists on airplanes. Detecting the chemicals used to create explosives, and the devices used to detonate them, is the fundamental issue, and it is an issue of detecting *substances* rather than density, shape, and moisture. This is why the technologies that already are being used at checkpoints: metal detectors and explosive trace detection, are more useful than full body scanners.

If full body scanners are even sometimes used in place of walk-through metal detectors and explosive trace detection (and they would almost have to be in order not to decrease passenger screening throughput substantially), my concern is that this would result in a decreased ability to find the items that actually threaten planes – explosives and detonators. The Government's proposed use of full body scanners fails on its own terms of success – this is one case where adding a layer of 'security' will actually decrease security overall.

Proposal

1. The only new technology that would actually improve airport security would be explosive trace detection devices with increased efficiency (so that they can be used on everyone without decreasing throughput), increased sensitivity (so that sanitizing techniques are less effective in evading them), and increased discrimination among explosive materials (to decrease false positives from perfectly safe materials).

2. If the people who would otherwise trigger a false positive in the metal detectors, such as those with pacemakers or artificial hips, would prefer to use full body scanners, the Government should allow them to opt *in* to full body scanning.

Scanners' Effect on Terrorist Behaviour

The central mistake in this bill is the Government's assumption that more technology and more 'layers' provide better security and deter terrorists. They do not. As I wrote in my submission to the House inquiry:

> "After the security measures that have already been implemented – X-ray machines for bags, metal detectors, and explosive trace detection (and, one would hope, security checks for all airport personnel in the sterile area) – the additional security provided by additional measures and more technology at the security checkpoint is essentially zero, while the cost, not only in terms of buying, maintaining, and operating machines, but also in terms of hassles for passengers, rises rapidly.
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> This is for two reasons. First, once a terrorist organisation is at the point of needing to use a suicide bomber to attack a target (which is the situation that terrorists attacking commercial passenger planes find themselves in now), the primary cost to the terrorist organisation comes in recruiting, training, and equipping the suicide bomber. The bomb itself, and the delivery mechanism, are only small components of the cost. Terrorists are unlikely to be deterred from attacking airplanes any more by full body scanners than they were by the requirement to divide their liquids into 100-ml bottles (a 2006 security measure which was followed by two major bomb plots against US planes). As has been shown with all previous checkpoint security measures, terrorists will eventually find a way to game the system if they are really determined. Despite the Minister's assertions, there is no reason to believe full body scanners will be any more difficult to game than any other measure. Full body scanners (and highly intrusive pat downs) have been used in US prisons for years, but there is no lack of contraband that has somehow slipped through.

Second, as more and more visible security measures are added to airports, the value of attacking airports and airplanes increases for terrorist organisations. This is because they can now show they have made a mockery of security measures – the introduction of full body scanners in Australian airports would lead to airports and airplanes, in essence, becoming more valuable as targets for terrorist groups than they traditionally have been. In the US, for example, the 2001 Richard Reid plot led to the examination of shoes, the 2006 liquid bomber plot led to bans on liquids, Umar Farouq Abdulmutallab plot in 2009 led to the introduction of full body scanners, and the 2010 cargo plane bomb plot led to further security measures. This is a fundamentally reactive way of thinking about counterterrorism. As the examples indicate, US policies have not led to a drop-off in attempted attacks, but shifts to increasingly creative attacks that explicitly seek to make a mockery of airport security measures. Beyond the reasonable security measures that Australia has already implemented, following the US lead risks drawing Australia into an aviation security arms race with terrorists that the government cannot win in the long run."

Mandatory Use

Given that the European Union has decided against mandatory full body scans (a directive that, I should point out, the United Kingdom is violating with its policy of mandatory scans), this policy would make Australia the only Western democracy (aside from the UK's dubious example) to have mandatory scans in its airports. If the passenger feels that the 'intrusive' frisk would be less intrusive than a scan and would not violate his or her privacy, it is unclear on what grounds the Government would deny the passenger this option, since unwarranted intrusiveness in this situation is ultimately a judgment of the passenger receiving the pat down.

Furthermore, since the Government claims that it is able to resolve full body scanner alarms satisfactorily with targeted pat downs that are less 'intrusive' than the pat downs conducted in the US, it is unclear why these targeted pat downs could not be extended over the whole body in lieu of the full body scanner at the request of the passenger. If the issue is that full body scanner might alarm and indicate an object on or near the genitals, how does the Government intend to resolve such an anomaly *without* resorting to a pat down similar to that used in the US? The Government also does not address the issue of why, if the full body scanners are so effective, and alternative screening methods are so inferior, passengers with physical or medical conditions are allowed to receive these inferior screenings, and why terrorists would not simply choose an attacker who has a physical or medical condition in order to bypass the full body scanners.

Proposal

1. While I propose that the full body scanners not be introduced at all, if they are introduced, passengers should be able to opt out in favor of full-body pat downs.

Conclusion

The physical security at the checkpoint is in some ways the least important part of an aviation security regimen, and there is little point in adding layers of security to the

checkpoint beyond what is absolutely necessary. Every piece of technology that is added will eventually be defeated by a sufficiently competent terrorist organization (just as drug traffickers have routinely done in moving their drugs through airports), if it so chooses. Each additional visible 'layer' of new and ineffective technology makes aviation a more attractive target to terrorists, and presents an opportunity cost in that it is diverting attention from resources and analysis that actually could be addressing terrorism, such as better police and intelligence work.

The fundamental security threat to aviation is not what people bring on to planes; it is the terrorists themselves. A competent terrorist will always eventually find a way through any checkpoint that has to process civilians at a high rate, no matter what technology is deployed. This is assuming, of course, that terrorists actually need to go through the security checkpoint to attack a plane. They do not. General aviation security policy should not, after a point, be focused on the checkpoint at all, but on decreasing the number of competent terrorists who ever get to the airport in the first place.

I should note that all views expressed above are my own, and do not represent those of the University of Sydney.

Sincerely,

Dr. Justin Hastings

Lecturer in International Relations and Comparative Politics
Faculty of Arts and Social Sciences
University of Sydney, New South Wales