Thursday 15 December 2016

Dr Jane Thomson
Committee Secretary
Senate Standing Committees on Rural and Regional Affairs and Transport
PO Box 6100
Parliament House
Canberra ACT 2600

Dear Dr Thomson

The Qantas Group appreciates the opportunity to contribute to the Rural and Regional Affairs and Transport References Committee (the Committee) Inquiry into the regulatory requirements that impact the safe use of Remotely Piloted Aircraft Systems (RPAS), Unmanned Aerial Systems (UAS) and associated systems (the Inquiry).

Qantas Group airlines including Qantas, Jetstar, Express Freighters Australia, QantasLink, Network Aviation and subsidiaries contributed $6.8 billion to the Australian economy in financial year 2016 and employed over 26,000 people[1]. The Qantas Group accounts for close to 60 per cent of Australia's domestic aviation capacity and just over 23 per cent of international capacity[2].

The safety of our staff and passengers is our number one priority and the Qantas Group acknowledges and supports the efforts of successive Australian Governments in establishing robust controls for the use of RPAS and UAS. In relation to the issues under examination as part of the Inquiry, the Qantas Group is able to provide the following comments and would be pleased to continue a discussion with relevant government agencies to address the key issues of concern we see in relation to the growth of unmanned aircraft capabilities for both commercial and recreational use.

Regulation

As the Committee may be aware, airlines are regularly in contact with the Civil Aviation Safety Authority (CASA) to examine matters relating to the safety of the aviation industry and the growing use of RPAS and UAS in Australia has been the subject of these discussions in recent years. Due to the complex and unpredictable nature of the use of this new and evolving technology, airlines acknowledge the difficulty faced by the regulator in ensuring the safest possible controls are in place. However, the Qantas Group remains concerned by the prospect of a collision between a RPAS or UAS and an aircraft, particularly within the vicinity of airports. Against this context, it would be opportune for the airline industry to confirm best-practice processes in managing the ramifications of an incident ahead of time.

Further, Qantas Group believes there is a need for high priority engagement with other groups and organisations around the globe to introduce technology to assist in managing the safest possible operation of RPAS and UAS aircraft to mitigate the risk of an incident occurring.

[1] DAE Report – Qantas Group Economic Contribution 2016
[2] Source: CAPA – Centre for Aviation and OAG.

The Qantas Group believes that the users of most concern are those operating – or intending to operate – under the 'excluded RPA' provisions of Part 101 of the *Civil Aviation Safety Regulations 1998* (Cth) (CASR). These users will often purchase small RPAS or UAS technology online and import the equipment without knowledge or appreciation of the safety requirements when operating the devices, particularly within the vicinity of airports. Such devices can be capable of reaching altitudes that will interfere with commercial aircraft traffic, and may even be modified by the user to achieve even greater altitude or payload capability.

The Qantas Group is of the view that the regulatory environment governing this sector of our industry needs to be forward thinking and take into account potential growth of usage and changes in the use of the technology as it improves, while addressing the potential dangers. In particular, the regulatory environment must give sufficient weight and resourcing to the accompanying enforcement regime. As with lasers and model rockets, this regime should involve education of – and strategic and tactical coordination between – state and federal law enforcement agencies, local government and CASA. Critically, it must also include a comprehensive suite of offence provisions and penalties to ensure general and specific deterrence.

In relation to local government participation in the regulatory and enforcement regime, the Qantas Group would encourage a process of awareness as a priority, to ensure that local government authorities are aware of the existing regulations and their role in enforcing them. In this way, council rangers would, for example, be primed to respond to an illegal or infringing RPAS or UAS operation taking place from local government land or from a public park. We would be pleased to assist the Australian Local Government Association or relevant government agencies with a process of education, particularly for local governments that surround operating airports.

There are examples internationally of how governments are trying to assist with the education of relevant authorities to facilitate improved management of these issues. A recent article written by the United States Federal Aviation Administration (FAA) demonstrates the opportunities for improved collaboration with governments and regulators to drive a safety-based outcome[3]:

> *November 16 2016 - Unmanned Aircraft Systems (UAS) that enter the protected airspace around airports can pose serious threats to safety. The FAA is coordinating with our government and industry partners to evaluate technologies that can be used safely to detect drones near airports.*
>
> *This week, the FAA and the Department of Homeland Security (DHS) are conducting drone-detection research in the vicinity of Denver International Airport. This work is part of the FAA's Pathfinder Program for UAS Detection at Airports and Critical Infrastructure.*
>
> *The work in Denver is one of six technical evaluations scheduled over an 18-month period.*
>
> *The State of Nevada and State of North Dakota UAS Test Sites conducted flight operations for the Denver evaluations. Industry partners involved in the Denver flights included CACI International, Liteye Systems and Sensofusion.*
>
> *The FAA plans to capture the data and findings from the evaluations and draft recommendations for standards. These standards will guide the selection of drone-detection systems for airports nationwide.*

[3] FAA Evaluates Drone Detection Systems Around Denver, 16 November 2016, https://www.faa.gov/news/updates/?newsId=86869

Other evaluation sites include Atlantic City International Airport, JFK International Airport, Eglin Air Force Base, Helsinki Airport, and Dallas-Ft. Worth International Airport.

In addition to DHS, the FAA's federal research partners include the Department of Defense, FBI, Federal Communications Commission, Department of the Interior, Department of Energy, NASA, Department of Justice, Bureau of Prisons, US Secret Service and US Capitol Police.

The House Report accompanying the Fiscal Year 2016 federal appropriations law and the FAA Extension, Safety, and Security Act of 2016 both directed the FAA to continue research into detecting unmanned aircraft in airport environments.

Again, the Qantas Group would be pleased to work with Australian authorities on initiatives to work with these organisations for a coordinated response.

In relation to existing safety management processes in Australia for devices that may impact commercial aircraft at an operating airport, Airservices Australia already treats RPAS and UAS use in a similar manner to lasers and rockets, which trigger a "Hazard Alert" in the event a hazardous operation is reported. The major difference however between an object and laser is that the latter will not produce an aircraft proximity event. Broadening the definition of 'aircraft proximity' may also improve crew awareness and assist in collection of data relating to these events or similar.

Technical Impact Assessment

The FAA is currently conducting RPAS and UAS impact testing on aircraft components such as windscreens, and Australia should participate in the interpretation and use of these results at a government level as a means of enhancing its regulatory regime on a risk basis. Information such as that being gathered by Virginia Tech will likely be of value to Australian authorities seeking to benchmark existing technical data.

Computer simulations (see Figure 1) indicate that while significant damage to an engine would occur following an RPAS ingestion, such an ingestion is unlikely to result in a serious incident. Figure 2 illustrates a 'before and after' from ingestion of 3.63 kg (8 lb) Quadcopter.

This area of research is being pioneered by Virginia Tech's Crashworthiness for Aerospace Structures and Hybrids (CRASH) Laboratory.

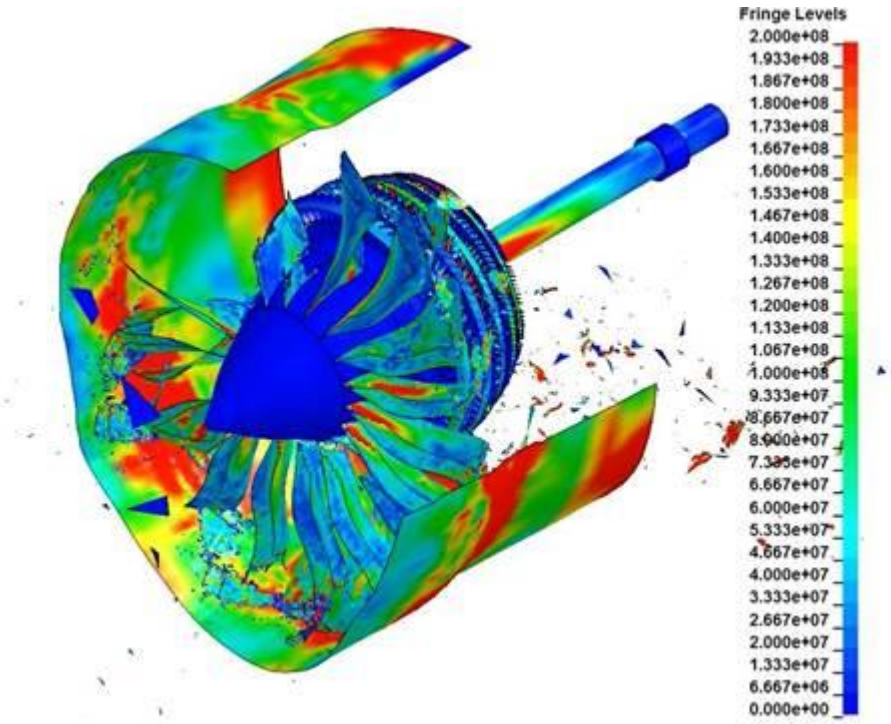

Figure 1 - Computer Simulation of Drone ingestion into Turbofan Engine

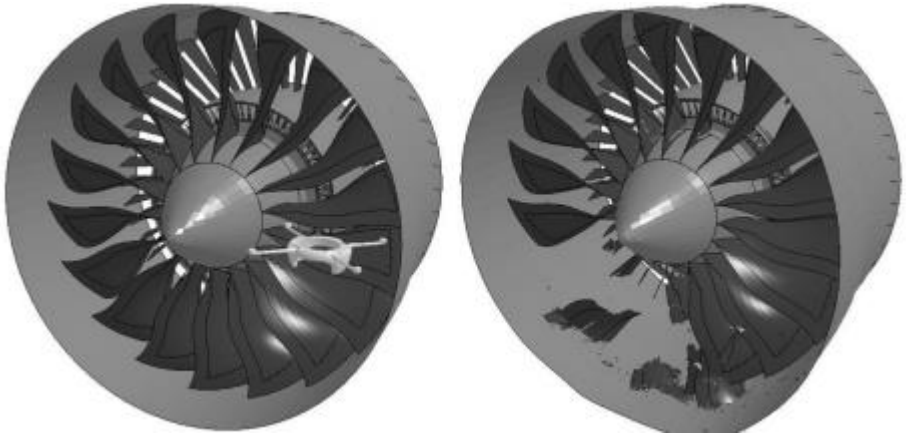

Figure 2 - Before and After Drone Ingestion

RPAS and UAS ingestion has historically been likened to a bird strike, and yet it is clear that devices of this nature – with their carbon fibre, plastic, glass and lithium components – are vastly different from an animal with hollow bones. These structural differences are of themselves a significant source of risk to aircraft operations.

The Qantas Group understands that in November 2016 a RPAS device caught fire in a Darwin post office after being posted from Queensland. The device contained a battery of similar size to a standard soft drink can. Given the combustibility of some batteries and the ingestion of the device itself, the damage that such an impact would cause to a turbine engine and/or to an aircraft full of passengers and fuel could be very significant.

The Qantas Group strongly encourages CASA and counterpart international organisations to work with aircraft manufacturers to test and plan for potential impacts to ensure that industry has a consistent and well developed management plan for impact events.

Summary and recommendations

The Qantas Group urges CASA to establish an ongoing working group comprising of RPAS and UAS operators, airlines, the general aviation sector, aircraft and engine manufacturers, Airservices Australia, Australian Transport Safety Bureau, State, Territory and local governments and other relevant agencies to oversee the ongoing development, implementation and management of regulations to appropriately govern the growing use of these devices. While the existing consultation measures have been effective, it may now be beneficial to broaden the focus to take account of evolving trends in device usage.

A major focus on the education of recreational device users across Australia should firstly be to ensure they are aware of the dangers posed by their devices, but secondly to ensure they are mindful of where they choose to operate their device.

In the event the Committee requires any further comment, Qantas Group may reserve the right to participate via a representative party, for example the International Air Transport Association.

Yours sincerely

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