Australia: Report reveals Qantas flight narrowly missed disaster

By Terry Cook
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An Australian Transport Safety Bureau (ATSB) preliminary report released last week on the November 4 midair engine explosion on a Qantas jumbo jet revealed that a fatal disaster was only avoided due to the exceptional skill of the plane's captain Richard de Crespigny and his crew.

Summarising the findings, ATSB chief commissioner Martin Dolan declared: "The aircraft would not have arrived safely in Singapore without the focused and effective action of the flight crew."

The ATSB report confirmed earlier confidential reports, cited by the *Sydney Morning Herald*, that the engine blast propelled shrapnel at high velocity into the Airbus A380 aircraft, causing extensive damage to its vital operating systems, wings and fuselage. The pilots faced a "cascading series of critical system failures" and 54 flight system error messages.

Shrapnel had severed a fuel line to a tank on the plane's wing, cut through wiring looms and wing panels, and struck the fuselage above the wing between the two decks of windows. Flying metal from the stricken Rolls Royce Trent 900 engine also hit the fuselage belly, posing the danger of puncture and decompression.

The A380 was carrying 80 tonnes of highly volatile kerosene in its 11 fuel tanks, two of which were leaking. With multiple sources of ignition, including sparks from severed electrical wiring, a massive mid-air fuel explosion was a distinct possibility.

Wiring damage prevented the crew from pumping fuel between tanks, causing a serious weight imbalance, with the plane becoming tail heavy. Unable to fully jettison fuel, the pilots faced a heavy landing, with an increased risk of fire. Not only was the number 2 engine gone, but the number 1 and 4 engines were "operating in a degraded mode".

According to the report: "Reverse thrust was only available from the No 3 engine, no leading edge slats were available, there was limited aileron and spoiler control, anti-skid braking was restricted to the body gear only, there was limited nose wheel steering and the nose was likely to pitch on landing."

Skin on the leading edge of the wing was perforated on the top and bottom surfaces, exposing at some points the internal honeycomb structure. The motor that operates the movable curved flap on the front edge of the wings was directly hit. Three of the smooth pod shaped fairings under the wing's trailing edge were peppered.

The pilots had to rely on gravity for the aircraft's undercarriage to drop into place. On landing, the aircraft had no skid brakes to prevent the wheels from locking and tyres from bursting. The plane's computer indicated that the pilots could not apply maximum braking until the nose wheel was on the runway, so that they may not have been able to bring the aircraft to a halt within the length of the runway at Singapore's Changi Airport. This posed the threat of an aerodynamic stall if the plane came in too slow, or a runway overrun if it came in too fast, both with potentially catastrophic consequences.

After the aircraft's autopilot malfunctioned, de Crespigny decided to fly the plane in manually from 1,000 feet. He managed to get the main wheels on the ground, followed by the damaged front wheels just six seconds later. By throwing the number 3 engine into full reverse he managed to pull up the aircraft just 150 metres short of the end of the runway. Even after landing, damage prevented the pilots from shutting down the number 1 engine and fuel continued to leak. Fire fighters on the ground shut down the engine only after drowning it in foam.

The ATSB found that the likely source of the explosion was a faulty oil pipe that may have allowed oil to leak into the engine. Oil catching fire may have caused a heavy turbine disc to fracture. The agency issued a notice requiring all airlines with Rolls Royce Trent 900 engines to carry out immediate inspections on the suspect component.

However, on November 23, even before the ATSB report was released, and with the cause of the explosion still far from clarified, Qantas had already put two of its A380s back into service. The company said the planes would not operate on the Melbourne-Los Angeles route that required maximum certified engine thrust. This only raised obvious questions about the safety of the engines to fly passengers elsewhere.

On December 2, just before the ATSB report was made public, Qantas pulled the two jumbos into hasty inspections for faulty oil feed pipes. A company media release claimed that this was in line with "Qantas's conservative, safety first approach". On December 3, Qantas "welcomed" the ATSB report and announced that one of the two planes had already been cleared to resume flying.

Reportedly, there are as many as 40 Trent 900 engines on airbuses now in use, including 14 at Qantas. In the wake of the Qantas engine explosion, Singapore Airlines grounded just three of its aircraft and only when inspections found oil stains. Lufthansa continued to fly its fleet after replacing only one engine. On December 6, Singapore Airlines underlined the competitive struggle dominating the airlines by announcing that it would deploy A380s on the Singapore-Los Angeles route next year, despite the controversy over their engines.

Reports have emerged that Rolls Royce had known about problems with the Trent 900 and was believed to have carried out two series of modifications to later models of the engine. Qantas CEO Alan Joyce claimed that neither the airline nor the aircraft manufacturer Airbus had been informed of these modifications. However, even if Qantas had been informed, its record suggests that it would have been reluctant to pull the airbuses out of service, given it would lose $20 million each week as a result.

Major questions remain unclarified. Why were the oil leaks not picked up in routine Qantas maintenance inspections? Did the failure to detect such warning signs relate to cost-cutting pressures associated with ever increasing competition in the airline industry? How far are carriers imposing limits on maintenance spending and enforcing speed ups on maintenance workers to keep aircraft flying?

As for Qantas's claims to be putting "safety first"--its low-cost offshoot Jetstar sacked pilot Joe Eakins last month after he spoke out over safety concerns. Eakins charged that when pilots "evaluated risks and determined the safest course of action" this was sometimes "at odds with the short-term commercial imperatives of the company". Australian and International Pilots Association vice-president Richard Woodward confirmed that pilots were concerned about the level of "under reporting" of incidents to air-safety regulators Eakins's sacking demonstrates the determination of Qantas to prevent any probing of the impact of cost cutting on safety.

Further reports indicate that Airbus is under constant pressure to meet delivery dates as airlines compete to get the super carriers into service to obtain an edge over their rivals. The airline manufacturer is scheduled to deliver over a dozen Rolls-Royce-powered super aircraft by the end of next year, primarily to Singapore Airlines, Qantas and Lufthansa. The three airlines have a combined total of 22 A380s on order.

In the increasingly cutthroat environment in the airline industry, maintaining profits is managements' overriding concern. The A380 engine explosion and the response of Qantas and other airlines must serve as a dire warning that major air disasters are already in the pipeline.