

Legal obligations of aircraft engineers and maintenance providers (Part 1)

In this and the following edition of *The Legal Lounge*, I outline some of the legal obligations of aircraft engineers and senior persons in aircraft maintenance organisations, and summarise recent New Zealand and Australian court decisions involving breach of aircraft maintenance standards.

FPP requirements

The same FPP test applies in principle to all participants in the civil aviation system. However, the statutory criteria in s10 of the Civil Aviation Act must be applied on a case by case basis, and with due regard to the nature of the privileges or role being performed. Aircraft engineers are entrusted with carrying out safety critical maintenance on aircraft and are expected to adhere to rigorous procedures in completing, documenting and releasing to service maintenance work performed on aircraft. There are also detailed requirements for documentation and use of spare parts. The system thus relies heavily on honesty, consistent application of and adherence to maintenance standards and safety practices, and thorough documentation of all work completed and released to service.

Convictions for fraud or dishonesty related offences may for this reason be considered relevant, and could be accorded significant weight, when assessing whether to grant an aircraft maintenance engineer licence (AMEL). There could also be similar implications for a participant applying for approval as a senior person in a Part 145 certificated maintenance organisation. However, in such cases, the Director would need to have regard to the participant's experience and track record in the civil aviation system.

The Director must also consider the person's compliance history with transport safety regulatory requirements, and any evidence of behavioural or mental health problems. When considering the nature of the privileges being exercised, one or two minor traffic offences might not prevent an applicant from being issued with an AMEL or approved to a senior person position in a Part 145 organisation. However, a significant history or pattern of road transport related offending could be considered adverse, particularly for a new entrant. Such a history could suggest a cavalier attitude or lack of regard for transport safety regulatory requirements and compliance with rules, and thus undermine the Director's confidence in the person's ability and willingness to adhere to or enforce safety critical maintenance standards and practices.

Continuing FPP and disclosure obligations

As with other participants, there is a continuing obligation to remain fit and proper to exercise the privileges granted, and to disclose any new information that may be relevant to that assessment, including subsequent convictions. If an experienced engineer or senior person in a certificated maintenance organisation has no adverse history or significant non-compliance record within the civil aviation system, a subsequent non-aviation related conviction is probably unlikely on its own to lead to an adverse FPP determination. While any prosecution for failing to adhere to civil aviation maintenance standards or rules will be viewed seriously, it also must be considered against all other relevant information and the person's track record in the civil aviation system. It may well be, for example, that a prosecution taken by the CAA for breaching maintenance standards would be considered sufficient penalty in some cases, and that the person's participation in the system can otherwise be managed through supervision and/or corrective training.

Court decisions involving aircraft engineers and maintenance providers

R v Potts and Horrell (2008) High Court, Nelson

On 14 June 2005 Mr Phillip Heney brought an R22 helicopter in to an aircraft maintenance facility for maintenance work. Extensive work was completed on the aircraft, which was eventually released to service on 25 or 26 August 2005. On 26 August 2005, Mr Heney collected the helicopter and flew the aircraft from Nelson to Murchison, involving about two hours flying time. Later that day Mr Heney took a friend on a short hunting trip, involving about 40 minutes flying time. Mr Heney then returned to the helipad at his property and, at about 30-40ft above the ground, he flared the rotor blades in preparation to land. At that point the tail rotor drive shaft failed at the flange connecting it through the aft flex plate coupling to the tail rotor gear box. This caused him to lose control of the aircraft, which crashed heavily on to the ground, landing on the starboard side. Mr Heney was killed almost instantly, and the passenger was seriously injured. Following a police and CAA safety investigation, it was established that the tail rotor drive shaft assembly had not been installed correctly and that this had caused the accident. Mr Potts, a contracted LAME, and Mr Horrell, the owner and chief executive of the maintenance facility, were charged with manslaughter and causing serious injury to the passenger, due to alleged breaches of their legal duties to take reasonable care in respect of the supervision, inspection and certification of maintenance work carried out on the helicopter. Following a jury trial, they were each found guilty and convicted of both charges. In the sentencing decision the Judge, who had also presided over the trial, outlined the evidence and events leading up to this tragedy.

The aircraft had required a 100hr inspection, and the main rotor blades and some other components were required to be replaced. During the inspection it was found that the tail rotor drive shaft also needed replacing due to corrosion. Most of the work was done by the only full time employed engineer at the time. He was considered to be competent, but relatively inexperienced and did not hold an AMEL. As the previous LAME employed by the maintenance facility had left some months earlier, Mr Horrell had an arrangement whereby he contracted in LAMEs to do the necessary supervision, inspections and certification work required under Part 43 of the Civil Aviation Rules.

However, concerns were held as to whether the engineer was receiving adequate supervision and guidance. A CAA inspector spoke with Mr Horrell about this issue, and subsequently visited the facility on 1 August 2005, emphasising in particular the need for direct supervision of certain work. The inspector stated in his evidence that he emphasised to Mr Potts and the engineer the difference between the supervision of maintenance work which could still be seen and thus be adequately inspected once completed, and that which could not. Certain assurances were then given to him about the amount of direct supervision the engineer would receive.

As it transpired, there were difficulties in fitting the new tail rotor drive shaft, as it was not the correct part for the aircraft. The positioning of the engine and the drive pulleys running off the engine had to be adjusted, as did the positioning of the tail rotor gearbox. This necessitated the full time engineer, together with a part time engineer, removing the tail rotor drive assembly a number of times. On 5 August 2005 the engineer attempted to contact Mr Potts and Mr Horrell, who were both engaged in doing maintenance work for an airline, to advise that the tail rotor drive shaft assembly was ready to be installed for the final time.

He subsequently spoke with Mr Horrell and sought advice as to how far he could go in re-assembling the parts to the aircraft. He was reportedly told to go as far as he could. This included installing the tail rotor drive shaft back into the tail boom, fitting the tail boom back on to the main fuselage of the helicopter, and bolting everything up. Mr Horrell also told him that Mr Potts considered it was acceptable for him to complete this work. The Judge accepted he had not in fact discussed this with Mr Potts or given Mr Potts an opportunity to inspect the work before it was installed on the aircraft.

After installation, the tail rotor drive shaft could only be inspected through a small inspection aperture (the size of a fifty cent piece) in the aft end of the tail boom. Mr Potts attempted to inspect the tail rotor drive shaft assembly and in particular the aft flex plate coupling through that inspection aperture, but did not require it to be removed for a full inspection. Despite looking twice, and rotating the coupling by turning the tail rotor, Mr Potts did not detect that the aft flex plate coupling had been assembled incorrectly, as it could not be viewed properly through the aperture. The jury considered his inspection was inadequate and amounted to lack of reasonable care.

The Judge noted that Mr Potts had always accepted responsibility for failing to detect the miss-assembled tail rotor drive shaft assembly. However, he maintained throughout the trial that it was acceptable to inspect the aft flex plate coupling through the inspection aperture, a position disputed by several LAMEs who gave evidence, and ultimately rejected by the jury. The Judge considered that Mr Potts most likely knew this was unacceptable, but had not wanted to put the engineers and business to the trouble of having to take the tail boom off and slide the tail rotor drive shaft assembly out of the boom to enable a proper inspection, with the tragic consequences that ensued.

Mr Potts was sentenced to 300 hours of community work and ordered to pay \$10,000 in reparation. Although Mr Potts' AMEL was suspended during the trial, and he indicated that he would not contests its revocation following the guilty verdicts, the Judge made reference to his extensive experience and previous unblemished track record, and encouraged him to consider re-entering the system as a LAME at a future time. I am not aware if he has since attempted to do so.

The Judge regarded Mr Horrell's offending as more serious. In addition to instructing the engineer to complete the work without supervision or prior inspection, he had been dishonest in asserting Mr Potts' prior agreement to this course of action. Further, although Mr Potts carried out the initial inspection and certified the aircraft for release to service, the duplicate inspection certificates for the aircraft, which Mr Horrell was supposed to complete, were never done. Mr Horrell was fined \$25,000 in reparation in addition to the sentence of 300 hours community work. The judgement records that Mr Horrell decided to leave the aviation industry in New Zealand and the maintenance business was sold prior to the trial.

In the next edition of *The Legal Lounge*, I will summarise some recent Australian cases upholding decisions of the Civil Aviation Safety Authority to revoke or impose conditions on the licences held by aircraft engineers on fit and proper person grounds.

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