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Re: Liability of parties for light aircraft maintenance

I am asked to provide an urgent advice dealing with the potential criminal and civil liabilities of various persons who might perform maintenance work of light aircraft.

The advice is given after reference to the Civil Aviation Safety Authority (CASA) *Draft Notice of Proposed Rule Making – A Proposal to Modernise Rules for the Licensing of Maintenance Personnel for Small Aircraft* (the Proposed Rule) but the matters in it equally apply under the present regime.

I am instructed that the Proposed Rule will expand the categories of pilot maintenance and allow apprentices to perform some work and certify it themselves. This will increase the areas of risk identified.

Parties

There are four potential affected parties when it comes to liability for improperly performed maintenance work. They are:

1. The airline or aircraft owner
2. The last Licensed Aircraft Maintenance Engineer (LAME) who worked on the aircraft
3. The pilot (regardless of whether they worked on the aircraft or not)
4. Any apprentice or other person who worked on the aircraft whether legally or not

Liability

There are three main areas of potential liability -

1. Breach of the Regulations
2. Civil liability for damages for negligence
3. Criminal liability for gross negligence

The first would result in a fine and possible loss of licence.

The second would result in an award of money to reflect damages such as damage to the plane, loss of income or injury resulting from a crash. This sum could be very substantial.

The last would be a charge of criminal negligence which would result in a conviction for manslaughter at its most serious. Heavy fines or even imprisonment may follow.

Issues

I am asked to advise specifically -

1. Is it an offence for a pilot to do work on a light aircraft which is permitted under the regulation and not to record this?
2. What are the potential liabilities of the last LAME on the record where a problem occurs as a result of maintenance conducted by someone else and what can they do about it?
3. Can pilots be charged with tampering with an aircraft or otherwise be liable for faults occurring as a result of work they performed
 - a. Within the Proposed Rule or current regulation
 - i. With appropriate training
 - ii. Without appropriate training
 - b. Outside the Proposed Rule or current regulation
4. What is the liability of apprentices and masters for work improperly done under the Proposed Rule?

Discussion

Is it an offence for a pilot to do work on a light aircraft which is permitted under the regulation and not to record this? Yes, and the owner and LAME might be liable too.

Maintenance is covered under the *Civil Aviation Regulation 1988* which is made under the *Civil Aviation Act 1988*. In summary, Regulation 42AZ defines who can do what. Pilots are permitted to do the items in Schedule 8. These include the following

12. Replacement, cleaning, or setting gaps of, spark plugs.
13. Replacement of batteries.
14. Changing oil filters or air filters.
15. Changing or replenishing engine oil or fuel.
16. Lubrication not requiring disassembly or requiring only the removal of non-structural parts, or of cover plates, cowlings and fairings.
17. Replenishment of hydraulic fluid.

The Regulation makes it clear that whoever carries out maintenance, it must be recorded.

CIVIL AVIATION REGULATIONS 1988 - REG 42ZE

Certification of completion of maintenance on aircraft in Australian territory

(1) A person who carries out maintenance on an Australian aircraft in Australian territory must ensure that completion of the maintenance is certified in accordance with:

(a) if the person has an approved system of certification of completion of maintenance -- that system; or

(b) if paragraph (a) does not apply -- the CASA system of certification of completion of maintenance.

Penalty: 50 penalty units.

(2) For the purposes of this regulation, maintenance performed by employees of an employer who is the holder of a certificate of approval, an aircraft maintenance engineer licence or an airworthiness authority is to be taken to be carried out by the employer and not by the employees.

(3) An offence against subregulation (1) is an offence of strict liability.

Note For **strict liability**, see section 6.1 of the *Criminal Code*.

If a pilot does maintenance under the present Schedule 8 or the Proposed Rule, they commit an offence of strict liability for failing to record that.

Where a LAME discovers that maintenance has been done on an aircraft and there are no records, they should ensure they do not become a party to that offence or assume liability for negligence by turning a blind eye or failing to take all steps necessary to disassociate themselves from the conduct. For example -

- a. Record the fact on the logbooks that work has been done and not recorded
- b. Inform the owner
- c. Inform CASA
- d. Attempt to locate the person who did the work and have them complete the records.

Where an owner knows that unrecorded pilot maintenance has taken place and does not take similar action, it too could be party to that offence and also risks being held criminally or civilly liable for damage caused by faulty pilot maintenance and also as a party to the offence of failing to record pilot maintenance.

What are the potential liabilities of the last LAME on the record where a problem occurs as a result of maintenance conducted by someone else and what can they do about it? The LAME last working on the system is the most likely person to face legal action and will be hard pressed to prove it was not their action or neglect that caused the problem. LAMEs should be vigilant that any other work done is recorded and that they look for and record any maintenance work not performed by them.

I have already suggested that where the LAME knows of unrecorded maintenance conducted by someone other than them, they are at risk if they don't take steps to correct that.

In addition, where the LAME is the regular servicer of an aircraft and would expect no-one else had worked on the aircraft or any part of it, the LAME risks being held responsible as the last person recorded as having worked on the aircraft as a whole, or that system in particular.

This will be so where even when the LAME does not know that unrecorded maintenance work has taken place.

I have defended a LAME charged with manslaughter simply because he was the last person on the record for a system that failed. The trial became all about proving whether someone else might have done the negligent work. It is not easy for a LAME to show something he knows nothing about.

I would recommend that a LAME -

- a. keeps their own notes or copy of the logs showing what they did and did not do and keeps them independently of the owner;

- b. checks all systems before working on them to see if any unrecorded maintenance has taken place. If it has, record that fact and advise the owner in writing that the whole system should be overhauled as the LAME cannot be certain what state it is now in; and
- c. put in place checks, such as seals, to show if certain work has been done or systems accessed.

Can pilots be charged with tampering with an aircraft or otherwise be liable for faults occurring as a result of work they performed within the Proposed Rule with appropriate training? If it is negligent or does not meet the standard, yes.

An example will best illustrate. A pilot of a B3 aircraft notes during pre-flight checks that the hydraulic levels are low. They know they are permitted to replenish it and have in fact received the training. They mistakenly select the wrong grade of fluid which is in a container which is not labelled but turns out to be for a different type of aircraft or system. As a result an accident occurs. The pilot might be held criminally and civilly liable in negligence.

You will note that if there was no record of this maintenance, the accident might not occur until after the LAME next checks the hydraulic fluid. They will thus be certifying a system that is faulty but about which they do not know someone else has worked on.

Further, if the pilot does record they used the correct grade of hydraulic fluid, the LAME will certify the system and if the accident later occurs there will be a record of correct service by both but the LAME is the later.

Can pilots be charged with tampering with an aircraft or otherwise be liable for faults occurring as a result of work they performed within the Proposed Rule but without appropriate training? If it is negligent or does not meet the standard, yes and also with an offence against the regulation

Another example. A pilot of a B3 aircraft notes during flight that the engine is not as smooth as usual. She suspects the spark plugs. She has not received training in servicing spark plugs or not the correct type for that engine. She sets the gap incorrectly. The plane crashes. The pilot will be criminally and civilly liable.

The position for the LAME is as above but potentially even worse. Where there is a record by a pilot that they did such work and a LAME looks at the plane and does not check the checkable (like the spark plug gap), they risk being held responsible especially if doing other work on the same system.

In other words, the LAME should re-check all pilot maintenance or note specifically on the record that they have not and they are not certifying that part of it.

Can pilots be charged with tampering with an aircraft or otherwise be liable for faults occurring as a result if work they performed outside the Proposed Rule? If it is negligent or does not meet the standard, yes and also with an offence against the regulation regardless of whether they do it properly.

If a pilot were to disassemble and lubricate the engine (which is not permitted) they can be charged with a breach of Regulation 42AZ. If the plane crashes as a result they will be criminally and civilly liable too.

It is unlikely such work will be recorded so the LAME last working on the engine is the likely to be viewed as the offender.

What is the liability of apprentices and masters for work improperly done under the Proposed Rule?

If an apprentice is properly taught, does the right work and records it properly there will be no problem.

If there is a problem, each of those elements will come into focus.

A LAME's worst nightmare would be where an apprentice has done work they have been permitted to do and certified it, but did it incorrectly. If the apprentice claims they were taught how to do it and that they did it that way, it would be hard for the LAME to show they taught them the correct way.

The LAME, as a person likely to have more money, is more likely to be sued as a consequence of either negligently teaching the apprentice or negligently allowing an untaught apprentice to do that work.

The Proposed Rule

I have not had time to examine the Proposed Rule in detail however it appears there is a disconnect between it and the Regulation. The Regulation specifies what maintenance the pilot can do themselves. The Proposed Rule sets out requirements for the pilot signing off on that work. It would appear that under the Proposed Rule a pilot could sign off for release an aircraft which they did not personally perform the work on.

The present regulation lets any non-student pilot do the 22 items in Schedule 8

(4) Subject to subregulation (5), a person may carry out maintenance on a class B aircraft in Australian territory if (...)

(d) the person is the holder of a pilot licence (not being a student pilot licence) that is valid for the aircraft and the maintenance is specified in Schedule 8; or

But the Proposed Rules mean they need more skills and training:

pilot maintenance in relation to the tasks that may be carried out by the holder of a pilot maintenance sub-category, means the maintenance mentioned in items 1 to 22, inclusive, of Schedule 8 of CAR 1988 or the proposed Appendix VIII of Part 42

The holder of a pilot maintenance sub-category of B3 (B3.8) may issue a certificate of release to service only following completion of maintenance that falls within the scope of items 1 to 22, inclusive, in Schedule 8 of CAR 1988.

I am not briefed with Appendix VIII of Part 42.

2. Privileges of a licence/ authority — carry out maintenance

2.1 The holder of a B3 may physically carry out any maintenance in respect of which he or she may issue the certificate of release to service (CRS)

3.3 An applicant for the sub-category of category B3 that is for pilot maintenance (B3.8) must:

- (i) have accumulated at least 2 years of practical maintenance experience on operating aircraft relevant to the sub-category for which the authority is sought; and
- (ii) hold each unit of competency listed and coded in Table 4 that is marked X or indicated as its alternative for the sub-category; and
- (iii) hold each unit of competency listed and coded in Table 4 that is specifically indicated for sub-category B3.8; and
- (iv) before holding a unit of competency mentioned in sub-paragraph(iii), hold the qualifications or units of competency that are prerequisites for the unit.

The documents are quite confusing to the uninitiated in the time I have but it appears pilots have to do these courses if they wish to 'issue a certificate of release to service'.

MEA144A Perform administrative processes to prepare for certification of civil aircraft pilot maintenance

MEA212C Inspect, test and troubleshoot basic aircraft instrument systems and components

MEA328C Maintain and/or repair aircraft mechanical components or parts

and assuming they are working on electricals

MEA202C Remove & Install basic aircraft electrical system components

I am instructed that this is as a result of apprentices being able to do the Schedule 8 items after 2 years of training. I have not been able to find the references but assume there is a legislative prohibition on flying an aircraft without a current maintenance release.

It appears that if the intention is to allow pilots to do pilot maintenance and that they are still required to record it, then that certification has to be a certification of maintenance on which a later LAME can rely [see Section 43(8)] but that the pilot must now undertake the training listed above. If that is so it will improve the current situation for LAMEs. It does not make it any more likely that the pilot will assume the risk by making the records.

This view is provisional only given the complexity and volume of the material and the time available to consider it and does not affect the comments I make which largely reflect the situation under the current arrangements.

Conclusion

LAMEs

The scenario on which I have focused is that where a LAME and the apprentice work for a smaller airline or sole operator. It might also be a private plane where the temptation is for the owner to do as much pilot maintenance as they can. The increased likelihood of changing LAMEs between services would lead to a even more confused and risky situation for the LAME.

In such a case a LAME would be well advised to place a disclaimer at the start of any records. Even doing this would not necessarily protect the LAME where the fault might later have been found to be something they 'should' have found. LAMEs might have to conduct longer pre-work inspections and pass these costs onto customers in order to mitigate this risk. Some might refuse to work on aircraft on an ad-hoc basis.

LAMEs might also be wise to seek a declaration from the pilot and owner that there has been no maintenance on the plane other than that recorded and that the LAME is not being asked to check that such maintenance was properly carried out.

Apprentices

Any apprentice should be wary about certifying any work they do. They are not being paid to take the risks that flow from doing so. They would be wise to insist that the LAME inspects the work and signs off on it. If they do sign, they should ensure they stay strictly within the proposed rules and that they have received proper training for that system. They should record what training they received and check off the work against that training.

Owners

I am also of the view that it is likely that anyone suffering a loss as a result of improper maintenance will almost certainly join the owner in any resulting legal action. As against the owner it is easy to show that they allowed untrained or improperly trained people (pilots or apprentices) to service the plane or did not have the LAME check all non-LAME work.

The safest course for an owner would be to ensure that a LAME did or re-checked all maintenance. The next best option would be to ensure whoever did work they were only doing that which the regulation allowed, that they were properly trained and that they recorded their work. The owner could then rely on this to argue they were not negligent.

Also any owner who did not ensure that all pilot maintenance was recorded might well be a party to that offence and also at least partly liable if that failure to record contributes to any loss – for example, if the LAME doesn't know the hydraulic fluid was put in and so does not double-check it. Section 42ZA(1) also appears to make them strictly liable.

Pilots

There is no benefit to a pilot in performing pilot maintenance where they can avoid it. Where it must be performed, for example, a flat tyre on a remote runway, the pilot would be well advised to -

- a. ensure they have adequate training to do the work;
- b. document their attempts to have the most qualified person available do the work and why they had to do it themselves;
- c. document accurately what they did in a form that complies with the Regulation;
- d. inform the owner;
- e. inform the LAME;
- f. request that a LAME re-check their work.

If they fail to do any of these then they run the risk of being held liable for any accident that results from their doing the work. That liability would continue with them if the LAME were to record that they had specifically not re-checked and recertified that work or that part of the system.

Conclusion

Pilot maintenance is an obvious necessity, especially in relation to non-critical systems such as removing or adding seating which happen at remote sites.

LAMEs are licensed for a reason. There needs to be a strong reason to say why anyone other than a LAME should do any form of work which if done incorrectly puts safety at risk.

Inevitably and sadly, another light plane will crash due to poor maintenance. When it does, the legal system will attempt to apportion responsibility. The Proposed Rules do not change this and are not likely to cause pilots not to do their own illegal maintenance or to record that which they are permitted to do. If it in fact requires extra training, it will in fact ensure that pilots who don't do the training but still do the Schedule 8 work are even less likely to record it.

I have not attempted to go into a detailed legal description of the liability issues or the various categories of work. Rather I have attempted to explore the issues of liability when persons other than a LAME works on an aircraft. Given the time constraints I have relied upon hypothetical examples. When time permits, I would be happy to advise in more detail on any aspect of liability of the Proposed Rules.



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