

---

# **Terms of Reference for Agricultural Aircraft Safety Review**

# Table of Contents

<b>Terms of Reference for Agricultural Aircraft Safety Review</b>	
Background .....	1
Purpose .....	1
Authority .....	1
Scope .....	1
Review Process.....	2
Time Frame .....	3

## **Terms of Reference for Agricultural Aircraft Safety Review**

### **Background**

There is increasing concern in GA Group operational staff and sectors of the agricultural aviation industry regarding the rebuilding of aging aircraft and, in particular, the use of old airframes with new components and significantly more powerful engines.

The aircraft being re-engined are generally very old. In some cases, the wings and sections of the fuselage have been re-skinned but the structure remains basically the same. The aircraft have given many years of service in rugged conditions. As well as lengthening the fuselage to keep the centre of gravity (CG) within limits because of lighter engines, fuselage plugs are added to accommodate larger hoppers. Little else is new. Such aircraft are stated to have a rejuvenated life, as if new. In addition to carrying significantly heavier loads, the powerful new engines are capable of driving the aircraft to much higher speeds.

Associated with the concerns are reports (many of them anecdotal) of the rate of defects/failures occurring in areas such as the undercarriage, tail fin/rudder structure, wing spar and engine mounts.

Of added concern is the relative lack of appreciation of aerodynamics, weight and balance by many agricultural pilots, in particular the need to reduce speeds, manoeuvre and G loadings at high all up weights.

The matter of deregistration of crashed aircraft and the re-use of data plates is also included in these concerns.

### **Purpose**

The purpose of the investigation is to gather information, authenticate anecdotal stories as far as is possible and make recommendations regarding currently operated agricultural aircraft design, continuing airworthiness, maintenance and operational practices and techniques.

### **Authority**

This review is sponsored by General Manager General Aviation (GMGA) John Lanham.

The Terms of Reference for the review have been written by Manager Rotary Wing and Agricultural Operations (MRW/A) Unit John Fogden.

### **Scope**

The scope of the review is to:

- Review the Bernie Lewis report commissioned and completed in 2005 and to review the resultant recommendations.
- Review all New Zealand Civil Aviation Authority documented safety occurrences, findings and open actions relating to agricultural aircraft.

- Review NZ airworthiness schedules for all agricultural aircraft types currently in operation or under certification.
- To conduct a study in association with NZ agricultural aviation operators and pilots to further quantify possible unreported incidents, occurrences, defects and structural failures and structural fatigue.
- Consider the airworthiness and operational implications of operating modified agricultural aircraft where old airframes are being fitted with more powerful turbine engines.
- Consider the implications of current non-terminating certificates of airworthiness in the agricultural context (i.e., vs four yearly and eight yearly rebuilds).
- Review NZCAA policy for the re-use of data plates from crashed aircraft.
- Discuss with industry broader operational safety concerns such as hopper size, compliance with Limitations, Appendix B Overload provision.
- Consider the available technology to assist the measuring, recording and retrieval of hopper loads.

### **Review Process**

The review team will be comprised of representatives from the CAA Aircraft Certification, Safety Investigation, Safety Analysis and Rotary Wing/Agricultural units. The team consisting of Jack Stanton, Bob Jelley, Ivan Harris and representatives from Safety Analysis (Peter Nalder) and Safety Investigation (Ian Stobba) with Elizabeth to assist as SAO is to conduct an investigation in accordance with these Terms and report to the GMGA.

The team is to:

- Conduct its reviews of documented occurrence, defect and accident reports, airworthiness schedules and the Bernie Lewis report, using internal CAA database material.
- Conduct its investigation of undocumented information, anecdotal evidence and opinion from reputable and appropriately experienced agricultural aviation sources.
- The investigation is to be conducted in a manner that supports a combination of document reviews, interviews of persons as appropriate and receiving of written submissions and responses as the team considers necessary.

The following steps must be followed by the Review team:

1. Identify and confirm with MRW/A:
  - that the Review team understands the proposed format and procedure of the review;
  - that reputable and appropriately experienced aviation sources are identified and agreed on, for the purpose of industry consultation; and
  - establish if there are potential conflicts of interest or difficulties regarding the disclosure of the identity of any potential industry contributors.
2. Plan and pre-book (with SAO) regular meeting dates within the specified timeframe.

3. Review and analyse existing documentation and information, establish any other documentation required, obtain that information, then review and analyse it.
4. Establish a method and program of liaising with industry contributors that will be most cost and resource effective . Alternatively, the team may draft questionnaires for witnesses to respond to.
5. Assess evidence collected and compile a draft report.
6. Consider and recommend to GMGA whether a draft report should be made available to industry contributors or the agricultural industry at large.

**NOTE:** It can be anticipated that the Agricultural Industry Association (AAA) will wish to be closely consulted. It is important to the integrity of the review that consultation is not limited solely to senior AAA members and that a representative cross-section of the industry is considered during the review, particularly including employed pilots, their loader drivers and aircraft maintainers.

After considering the final report, the GMGA shall make recommendations to the Director. The Director will consider the final report and the recommendations and make any appropriate decisions regarding ongoing agricultural aircraft design, continuing airworthiness, maintenance and operational practices and techniques.

### **Time Frame**

This investigation should be completed as soon as the existing routine workload of the review team members allows. Preference should be given to this project when near to mid-term work programmes are being established.

MRW/A and GMGA shall be fully appraised of the progress of the investigation and shall be informed if any amendment is required to the specified time frame.

John Fogden  
Manager RW/A  
General Aviation Group

25 January 2007