

Tiger Moth Club of New Zealand Inc.

Spinning – Avoidance and Recovery Training Programme

Background

On 18th October 2003 a DH82A Tiger Moth aircraft participating in the annual Tiger Moth Club 'fly in' at Taumaranui, New Zealand entered a spin shortly after taking off to participate in a bombing competition. It crashed just beyond the boundary of the airfield and both occupants were killed on impact.

Whilst the final report from the Civil Aviation Authority is still awaited, the aircraft was fully airworthy and pilot incapacitation has been ruled out. The weather was not a factor, with calm clear conditions prevailing. The pilot in command was experienced, held a flight instructor rating - but had limited exposure to the aircraft type.

Many aircraft spin. The consequences of an inadvertent exposure, particularly at low altitude, are generally serious in their outcome. Examination of past records indicates that this accident is not isolated - nor is it unique to New Zealand. A number of fatal accidents have occurred in previous years. The table below is an extract from Civil Aviation Authority accident reports over a three year period that attribute the dominant cause of the accident to a spin manoeuvre. As can be seen, the aircraft types encompass a wide range and the level of pilot experience is also distributed over a broad band.

Date	Location	Type	Reg	Killed	Pilot Hours
15 Dec 00	Wanaka	Pitts S2A	PTO	Two	12,346
25 Dec 02	Thames	Bantam	SPK	Two	200
28 Dec 02	Tauranga	Zenith	JLP	Two	465
31 Jan 03	Raumati South	Tomahawk	USA	One	57
17 Jun 03	Loburn	Rans Coyote	CMC	Two	77
18 Oct 03	Taumaranui	Tiger Moth	DHA	Two	1,487
21 Oct 03	Ararimu	Steen Skybolt	JET	Two	2,637

Spin Fatalities – 2000 to 2003 – CAA Reports

Historical Training

In the past, spin training has been an important element for pilots converting to low energy/low power/high drag type aircraft types with less than forgiving stalling characteristics. Those characteristics pretty much encompass aircraft types up to the early fifties. **Basic** flying training programmes in the Tiger Moth and similar types exhaustively covered stalling and spinning exercises prior to a student being permitted to go first solo. This exposure was driven by the high incidence of these manoeuvres featuring in the accident rate. There is little doubt that where **basic** training is conducted on those types today, a similar emphasis would be used.

More modern aircraft types, with their designed benign stalling and spin characteristics, has allowed the focus to drift away from spin training - both because of the reduced likelihood of entering a spin and because many of the types are not certified for the manoeuvre. A further contributing factor has been a commercial desire to reduce flight training hours.

In modern flight training, if spinning should form part of a training curriculum, it tends to be a component of the advanced phase of flying training, rather than at the fundamental flying technique level. Consequently, many pilots transitioning to older aircraft types, despite having moderate flying experience, do not possess the depth of knowledge and exposure to stalling and spinning that their earlier counterparts would have held.

Avoidance & Recovery Training

A measured training programme to provide tuition to spinning and the recovery techniques could significantly reduce the accident toll from spin related accidents. However, a greater benefit would be derived from examining the reasons that pilots expose themselves to the incipient stall/spin situation and the strategies to employ to avoid those situations. No matter how robust a spin recovery training programme is, it will not prevent the outcome of a low level spin experience.

A spin prevented is far more effective than a spin recovered from.

A reduction in the incidence of spinning as a contributory factor in current accident statistics can be achieved by addressing the following issues.

- Educate pilots into the aerodynamic background factors that contribute to the stall/spin
- Knowledge of the environmental situations that contribute to an aircraft being exposed to the stall/spin
- Practical techniques for the recognition and recovery from stalls/spins

To this end, the Tiger Moth Club of New Zealand is conducting a **Spinning – Avoidance and Recovery** training programme. With adequate funding, it will be offered to all flying members of the Tiger Moth Club who wish to participate, and, will be completed at little or no cost to each pilot. However, for their part, participants must be prepared to provide a suitable aircraft for the practical flying exercises to be flown. The Tiger Moth Club and a group of sponsors to the programme will absorb the additional costs i.e. providing instructors, fuel and training material.

Whilst the flying programme is specifically focussed on Tiger Moth Club members, it is realised that the benefits need to be expanded to embrace a wider pilot group. The first step in this process is the publishing of a GAP (Good Aviation Practice) booklet **“Spinning – Avoidance and Recovery”** for distribution to all New Zealand pilots. This is a joint venture between the Civil Aviation Authority who will provide the publishing

expertise and the Tiger Moth Club who will give the technical input. Associated with the publication of this booklet will be the distribution of a DVD to compliment the contents of the GAP Booklet. This will highlight the problem of spinning and give tools for all pilots to both avoid and recover from a spin.

A targeted flying training programme will then be undertaken specifically for Tiger Moth Club members involving two experienced flying instructors who will give a formalised flying training detail in each member's aircraft. This programme will be completed by October, 2006.

In recognition of the broad field of aircraft that have been involved in spin accidents, **all the training material produced will be made available at no cost to the wider aviation community.** The goal is to reduce the prevalence of spin accidents featuring in our accident statistics.

Tiger Moth Club Curriculum

Pre-Course Study

Initially, all members will receive a copy of the GAP booklet published by the Civil Aviation Authority. It will contain details of the aerodynamic principles involved, fundamentals of spinning, recovery techniques and avoidance strategies to combat the stall/spin risks. It will be essentially pre-reading material and will include a small self-examination section to establish comprehension of the material.

Pre-Flight Briefing

Pilots will conduct a specific pre-flight briefing. It will be in two phases – a *CD/Power Point* briefing, which will refresh the topics covered in the GAP booklet and additional factors specific to the De Havilland types. This will be followed by a personal briefing from an approved briefing instructor to cover the aspects addressed during the flight training detail. (It may not necessarily be the same instructor as the flying programme, simply because of the workload involved for the flying instructors).

Flying Training

A flight training detail of approximately forty-five minutes duration. The content will include slow and unbalanced flight, stalling, spinning recognition and recovery techniques. The flight training programme will be conducted under the supervision of the training organisation of the New Zealand Warbirds Association and content will be defined in October, 2005.

De-Briefing

A debrief of the flying detail to clarify any outstanding issues and review of student progress.

Flight Instructors

Initially it is intended to utilise only two flying instructors to complete this programme. A small number will give greater consistency of training and ensure it is to the highest standards. This may be reviewed should progress be slower than envisaged.

The flight instructors are Martin Burdan and Ryan Southam. Both are experienced instructors and aerobatic pilots on the DH82A. Their location – Wellington and Gore, should give geographical coverage and it is proposed that the bulk of the training will be accomplished during planned organised Tiger Moth Club events in March and October, 2006.

All instructors will be trained in the task by Richard Hood and Frank Parker (Chief Flying Instructor - Warbirds of New Zealand) to ensure a common philosophy and quality is applied to the training detail. Content of the flight training will be defined by the contributing group.

Contributors

- Robin Campbell Airbus A320 pilot. Beech D17S Staggerwing owner. Has held numerous instructional and management roles in Air New Zealand Ltd. Committee member Tiger Moth Club of New Zealand
- Keith Trillo Retired airline pilot. Learned and instructed on DH82 aircraft. Built Pitts S1 aircraft and flown air show and competition aerobatics. Test pilot on a number of aircraft certification programmes. Bolkow Junior aircraft owner.
- Richard Hood Boeing 737 pilot. Current NZ unlimited aerobatic champion. Four times Royal New Zealand Aero Club professional aerobatic champion and six times NZ Unlimited Aerobatic champion. Owner of a Pitts S1A aircraft and current aerobatic display pilot.
- Martin Burdan Secondary school teacher, 1650 hours vintage aircraft flying with 900 hours in Tiger Moths. Instructor with Sport & Vintage Aircraft Society Low level aerobatic display approval.
- Ryan Southam Professional pilot with Mandeville Aviation Trust. Current New Zealand Tiger Moth aerobatic champion. B Category Flight Instructor.