

**SOARING ASSOCIATION OF CANADA -
FLIGHT TRAINING AND SAFETY COMMITTEE –
RECOMMENDED PRACTICE SERIES
Safety Training Package for Club Safety Personnel**



SOARING ASSOCIATION OF CANADA

***SAFETY TRAINING PACKAGE
FOR
CLUB SAFETY PERSONNEL***

Recommended by the Flight Training and Safety Committee

First prepared by Dan Cook, SAC National Safety Officer, February 1999
Revised 2008 March 25 and 2011 August 28 (annexes originally by Ian Oldaker)

SOARING ASSOCIATION OF CANADA
L'ASSOCIATION CANADIENNE du VOL à VOILE

A NON-PROFIT ORGANISATION FOUNDED IN 1945
TO FOSTER MOTORLESS FLIGHT IN CANADA

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Revision History

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1	2008 March 25	Text re-written to reflect introduction of SAC National Safety Program and content.
2	2011 August 28	SAC address change and National Safety Program wording change.

Safety Training Package for Club Safety Personnel

Aim

The aim of this package is to provide assistance to SAC clubs in the training of club safety personnel including safety officers and to explain how to enhance and/or establish a club safety program.

Scope

This package includes the following:

1. Recommended role of the club Safety personnel and Safety Officer which includes:
 - a) Suggested duties or responsibilities and suggested Terms of Reference
 - b) Resource material and references
 - c) Implementation of a club safety news letter
 - d) Safety discussion at club meetings
 - e) Maintaining a club lessons learned bank
2. How to set up a club safety program
3. Suggestions on how to deal with safety issues in the club to deal with:
 - a) Rising incident rates
 - b) Lack of support or interest to complete safety initiatives
 - c) Incident/accident forms
 - d) Safety officer interviews & debriefs (intervention) with both experienced and inexperienced pilots
4. How to improve safety awareness and safety culture in your club.
5. How to conduct the SAC safety audit
6. How to complete SAC incident/accident reporting forms
 - a) Common errors
 - b) Missed information
7. Special Event and Contest Safety

Preamble

This manual is not a policy document and is intended only as a training document for safety personnel. It is not necessarily the only methodology that can be used to implement safety but includes recommended methods by FTSC & TC. It contains some templates, tools, and suggestion that can be used by safety personnel to make the challenge of improving safety easier. The principles used to develop management techniques suggested are similar to those used by Transport Canada and industry to develop Safety Management Systems. In addition, practical experience gained over the years has been applied to some recommendations.

1. Recommended role of the club Safety personnel and Safety Officer as follows:

Role of the Club Safety Personnel and Safety Officer

The club's safety officer (if not a club board member) should work with the member of the club's board of directors whom has been given oversight responsibility of the club's safety program as the "Director for Safety" or "Safety Director". In small clubs the club president might retain this responsibility. The Director for Safety should be the clubs champion for safety. Primarily, the role of the club safety officer will be to execute the club safety program on behalf of the club's Director for Safety. The Safety Officer should work to cultivate a safety climate within the club that will promote safety. This will depend greatly on the attitude of the club leadership and the safety officer's ability with the Director for Safety to influence that leadership. A **team approach** works best! The aim should be to develop a safety culture to include all pilots who should be equally interested in and dedicated to improving safety all of the time. To achieve this, the Safety Officer should work closely with the CFI. Often in smaller clubs the CFI is the safety officer. If possible different pilots who can work together should fill these two roles as the workload demands. The CFI is responsible to the club board and to Transport Canada for all flight training activities and is identified in Canadian Air Regulations as responsible for flight training safety. Many clubs have extended this responsibility to all club flight operations. In smaller gliding clubs who do not conduct flight training, SAC recommends a chief pilot be appointed to take on the role of supervising flying operations. The Safety officer can be the watchdog whose prime interest is the safe operation of the club in all ground and flying activities. See annex A – *Club Safety Program Implementation Training Manual* for details on how to develop a club safety program.

Suggested Safety Officer Terms of Reference:

1. The club Safety Officer should be the facilitator for the club's Safety Program working for the club's Director for Safety.
2. SO should be the focus for gathering and reporting of safety issues.
3. SO should work closely with the Board's Director for Safety and club CFI to ensure reporting system is in place and is used.
4. SO should conduct SAC Safety Audit for Clubs or organises an independent audit.
5. SO should collect incident and accident information for reports, and communicate with Regional Safety Officer and the SAC Safety Officer. The SO should draft the clubs annual safety report after completing the clubs hazard identification, risk assessment and risk mitigation planning process.
6. SO helps analyse data/situations that are reported, and discusses solutions for action with CFI and club leadership and safety stakeholders.
7. SO acts as a watchdog for unsafe situations/hazards and conducts routine inspections for same.
8. SO should report safety information as recommended in the SAC National Safety Program to the FT&SC through SAC national office or other convenient method.
9. SO should stop any unsafe action or practice and ensure corrective action needed is done.
10. SO should ensure safety issues are discussed at all club meetings and are included in all meeting agendas.
11. SO should provide safety information or training to club members in the form of a safety notice board, emails, safety news letter for alerts, notices, articles, etc.
12. SO should assist other members of the club such as Director for Safety, CFI, CTP, maintenance supervisor, property supervisor and other safety stakeholders on safety related issues or training. This could include formalized safety training for member in cooperation with the club CFI.
13. SO should conduct formal or informal safety culture audits with membership if required.
14. SO should draft articles on safety issues suggested for publication through FTSC.
15. SO should monitor safety information available on the SAC home page or Round Table safety section.

Role of the Regional Safety Officer

The role of the Regional Safety Officer is act as a facilitator to cultivate a safety climate within his region by assisting clubs with safety programs and the collection and dissemination of safety information under the SAC National Safety Program. The Regional Safety Officers should represent their region for concerns over safety

issues that require national attention with the SAC Safety Officer. The Regional Safety Officers are members of the Flight Training and Safety Committee and form the National Safety Committee chaired by the National Safety Officer. The National Safety Committee reports to the SAC Board Member who is appointed as Director for Safety. The Chairman of the FTSC acts as the Deputy Director for Safety and implements and executes the SAC National Safety Program at the National level.

Suggested RSO Terms of Reference:

The Regional Safety Officer is to assist club safety officers, when requested, with implementation of their safety programs:

1. RSO should assist clubs in the region with the implementation of the Club Safety Programs, and communicate with SAC Safety Officer.
2. RSO should assist clubs in region with SAC Safety Audit and encourage a non club member to assist in a club Safety Audit.
3. RSO should collect and disseminate safety information and communicate concerns on safety issues with the SAC Safety Officer. RSO will analyse safety report information as part of the Safety committee (FTSC) and make recommendations.
4. RSO should encourage participation between clubs within their region in contests, x-country clinics, etc.
5. RSO should draft articles on safety issues suggested for publication through FTSC
6. RSO should monitor safety information available on SAC home page;
7. RSO may review club safety audits and assist clubs by conducting site inspections and make recommendations for safety.
8. RSO can assist clubs with major accident investigations
9. RSO may assist in the conduct of instructor upgrade clinics within the region.
10. RSO may conduct instructor training for SAC if designated as a Course Conductor (train the trainer).

Role of the SAC National Safety Officer

The SAC National Safety Officer's main responsibility is the day to day implementation and supervision of the SAC National Safety Program. In this capacity the SAC Safety Officer will assist the Regional and Club Safety Officers in their efforts, and report safety issues to the FTSC. The SAC Safety Officer will implement recommendations from the committee and Safety Program Director or Deputy Safety Program Director (FTSC Chairman) as required.

Suggested NSO Terms of Reference

1. The SAC National Safety Officer will act as supervisor for the FTSC in the implementation of the SAC National Safety Program.
2. NSO should communicate with Regional and Club Safety Officers on safety issues.
3. NSO should maintain a register of Safety Personnel and contacts through the national SAC office.
4. NSO should receive and collect accident and incident information for analysis by the National Safety Committee (FTSC) and draft an annual SAC Safety Report for the committee. The NSO should also provide acknowledgement for club reports received and provide safety feed back on these report back to clubs.
5. NSO should encourage the development of a positive generative safety culture within SAC.
6. NSO should collect and disseminate safety information and resource material on safety issues.
7. NSO should review safety audits submitted and provide feedback to the clubs and FT SC.
8. NSO should review safety and training issues on behalf of SAC and make recommendations to the National Safety Committee and should provide safety and training advice or information to member clubs through Safety Directors, Safety Officers, CFIs and SAC website/FreeFlight.
9. NSO should monitor safety information on internet and make recommendations to the Chairman of FTSC (Deputy Safety Program Director) for the posting of information.
10. NSO should draft articles on safety issues suggested for publication through FT SC.
11. NSO should review club safety audits from regions and provide feedback to clubs, and make recommendations to SAC FTSC.
12. NSO can assist clubs with major accident investigations.
13. NSO should assist in the supervision of instructor training.
14. NSO can assist in National instructor training (train the trainer)

Role of Flight Training and Safety Committee

The Flight Training and Safety Committee is responsible to the SAC Board of Directors through the Safety Program Director for implementation of the SAC National Safety Program. The FTSC normally consists of 6 volunteer members from SAC clubs who are appointed by the FTSC Chairman to represent their regions (CFIs and SOs) in Canada. The committee mandate is to review safety and training issues on behalf of SAC and make training recommendations and provide safety and training advice or information to member clubs through SAC publications and through contact with clubs CFIs and Safety Officers. Specific terms of reference for the FTSC are in the SAC Procedures Manual. For the purpose of this training some of the tasks are listed below.

Suggested Terms of Reference:

1. The FTSC should develop, modify and implement the SAC National Safety Program.
2. They should perform analysis of safety and training data and make recommendations.
3. The FTSC should disseminate safety and training information.
4. The FTSC should approve safety information and recommend training standards for SAC publication.
5. They should provide recommendations for the training of all Safety Officers and CFIs.
6. The FTSC should review club safety audits from regions through the Regional Safety Officers and the SAC Safety Officer
7. FTSC should conduct or supervise national instructor training (train the trainer).
8. FTSC should where possible conduct accident investigations or assist TSB investigators or provide assistance to clubs for their own investigations as requested.

Resource Material

The role of safety officer is a challenging one in the least. The second greatest challenge is to collect information that will contribute to safety and your club safety program. The resources available include books, articles, news letters, and web sites dedicated to safety. SAC will have information posted to the web site to assist you and other web sites such as the SSA and BGA have good information. As always you will have to use your judgement to sort the “wheat from the chaff”. A list of specific safety references is also included at the end of Annex A.

- a. The recommended reading list includes the following SAC Safety publications, books and articles:
 - SAC National Safety Program, SAC March 2008, SAC web site
 - Club Safety Program Implementation Training Manual, Annex A
 - Template for a Club safety Program Manual, Annex B
 - Collection of Various Club Operating Procedures, Annex C
 - A Human Error Approach to Aviation Accident Analysis, Wiegmann and Shappell, Ashgate Publishing. Available for purchase over the internet at www.ashgate.com.
 - Managing the Risks of Organizational Accidents, James Reason, Ashgate Publishing
 - Gliding Safety, Derek Piggott (available through SAC pilot shop)
 - Soaring Accidents that Almost Happened , Stephan du Pont (available through SAC pilot shop)
 - Free Flight 1/98 - Incident Analysis (p9), Terry Southwood (for completing incident reports)

b. The following Web Sites are recommended for a look:

- SAC Safety Section on the “Round Table” – <http://www.sac.ca>
- SSA safety – <http://www.ssa.org/default1.asp> or http://acro.harvard.edu/SSA/ssa_homepg.
- DG-Flugzeugbau – <http://www.dg-flugzeugbau.de/inhalt-e.htm>
- BGA Safety – <http://www.esgc.co.uk/BGAdata.htm>
- Auxiliary Powered Sailplane Association - <http://mysite.verizon.net:80/engreenwell/ASA/index.html>
- OSTIV - <http://www.ostiv.org/> Training Safety Panel

Safety News Letter

This tool is used by most safety organisations including Transport Canada. SAC utilises the “Free Flight” magazine to raise issues and educate. A newsletter can be a good tool within clubs to discuss local safety concerns and issues. You may want to incorporate safety information into an existing club newsletter or start your own safety news letter. Should you use a safety newsletter a few tips follow:

- Do remember the importance of anonymity and impartiality. Don’t mention names or appear biased.
- Do not lose integrity with your audience or you will have to hand over safety duties to someone else. Once lost it cannot be regained.
- Do maintain your members trust or they will not report incidents to you so be careful what you say and how you say it. Be honest but supportive and try not to point the finger at individuals but rather look at the factors and in particular any human factors.
- Do recognise human nature.
- Do watch out for penalising individuals for reporting, either by policy implementation or by criticism. If you do, you may find yourself in an information vacuum.
- Do get your club CFI and leaders (director for safety) to approval/comments to avoid conflicts before voicing your articles to the membership.
- Do include safety information to be proactive versus reactive. You can provide articles on issues such as safe glider handling in the spring, field selection for off field landings when crops get higher in the late spring, effects of heat on pilots in the mid summer, wind gradient hazards in the early fall, etc.

Club Meetings

Safety should be discussed at all club board, instructor, and general meetings as a standing agenda item. You may find you have nothing to contribute on occasion, but others will always have some points to raise provided they are given the opportunity and respect for their contribution. This will help to open lines of communication and help with safety awareness and safety culture. If your club does not do this, insist that they do, or raise safety as an issue each meeting that you attend.

Lessons Learned Bank

This is an effective way to track safety information and conduct “handovers” to new safety officers. You will find that there are few incidents that have occurred that are unique. Solutions or recommendations have already been found. Keep a file on safety information with clips of articles, database on disks, or lists of incidents and recommended courses of actions. Keeping a personal journal for safety information is an additional good practice. What you want to avoid is new pilots making old mistakes!

Safety Book

A second journal should be kept on the flight line for pilots to write down safety comments on items ranging from incidents and snags on defective equipment to missing procedures. You may be surprised by what you learn. This gives more people the opportunity to participate. Look at the journal at least weekly and action items or the book will be soon ignored. This book can be used later in your annual risk analysis and risk mitigation planning to identify hazards.

3. How to set up a club safety program

One of the questions raised in the “Safety Audit” is whether your club has a safety program? This entire training package has been designed to give you the background information to establish your own club safety program. You can model your program based on the program described in Annex A - *Club Safety Program Implementation Training Manual*. Your program, tailored to your club, should include at least seven components: safety policy, basic safety process, a reporting/analysis system, safety training, emergency response plan, documentation, and a safety recognition system. An example club safety program manual is enclosed at Annex B as a template. This is what a club safety manual could look like and would be the end product that your club would use to implement your program (with an information copy sent to SAC). Once you have articulated and drafted your program have it approved by your club leadership. You will have to “champion” your program to keep it a working system otherwise it will be forgotten quickly and not used. A safety program must be dynamic. Having one “on the books” will serve as window dressing but will not improve safety. In order to assist club safety personnel a *Checklist for Safety Program Implementation* is included as Annex C. The forms at Annex D- *Hazard Identification*, Annex E – *Risk Assessment* are tools to help you action and record part of the analysis process. The key to improving safety is a safety process of finding the hazards, risk analysis, and risk mitigation planning. Ideally you will be addressing incidents (proactively) rather than making changes after accidents (reactively). To assist your incident analysis process annex H - *Notes On Incident Analysis For Use In Club Safety Reporting* written by Terry Southwood some years back is still valid. Also included as Annex F is a *Collection of Various Club Operating Procedures* sampled from many clubs to deal with operational hazards. You can use this menu to select procedures to help you develop or augment your own club operating procedures or operations aide memoire. For example, your club buys a new or used winch and you see a possible hazard for which you need some procedures. Lastly, safety training ideas are listed in Annex I.

4. How to deal with safety issues in the club

The first thing to note is that safety is the responsibility of everyone in the club not just the pilot who has the ultimate responsibility. The second challenge will be to recognise there is a problem. This is usually first noticed by a rising incident rate or worse still, a rising accident rate, if the incidents have not been reported. Usually there will be several incidents preceding an accident. However, long before there are incidents there may be indications of a poor “attitude” towards safety. Often the incidents are not reported or ignored. This will reflect on the safety culture at the club that is described in the next section.

Most frustrating for the safety officer will be how to deal with all of these issues particularly “attitudes”. Some might argue that people who may find soaring interesting are those who have become successful and have achieved a level personal wealth that allows them to spend money on an unimportant leisure activity. These people tend to work for themselves or be responsible to only selected individuals. They are used to being in charge. They can be competitive, confident, assertive, and impatient. They can also be self-centered and may have a resistance to authority or a need to prove themselves. This group can also be sensitive to criticism. This is an unflattering view but explains what we are up against.

The good news is that there are tools we can use. Peer pressure is an extremely powerful influential force, if you observe any unsafe activity by anyone, mention it to him/her. If you perceive no positive response, form a peer committee to approach that person with your combined concerns about their flying habits. This practice has been found to be successful. In addition, it should be extended in your safety program through the use of a safety committee to do the analysis of incidents/accidents and make recommendations to the club or to take

action as suggested.

The following pointers are offered:

- a. Immediate unsafe practice or situation: stop the action immediately if safe to do so (anyone should be able to do this regardless of status at the club). Draw attention to what is not safe. Direct corrective action required. Usually this step is not necessary, as someone will have already taken corrective action once attention has been drawn to the problem (i.e. open spoilers, unlocked canopy, etc.).
- b. Rising incident rate: take action immediately and bring it to the attention of the club leadership and the members, accidents will soon follow if ignored. Look for attitude causes or safety climate. Be careful not to embarrass anyone publicly, but be firm in you resolve and do speak to individuals separately to debrief them. The committee approach can be used. This can be initially a committee of two, the CFI and the Safety Officer. Also, correct situations that are not only a pilot factor (i.e. defective club radio, check list missing in club aircraft, etc)
- c. Lack of support or willingness to complete incident/accident forms: This is a common problem. If the pilot does not offer to complete the form in a timely fashion, complete the form yourself or record data for the incident form based on interviews with witnesses and pilot (normally done concurrently). Give the pilot a short opportunity to comment in the report in his own words, then after a reasonable time (one or two weeks) action the report with or without their input. Most will want to put their own views down if they know an accident report or incident report will have action taken without their input.
- d. Safety officer interviews & debriefs (intervention) with both experienced and inexperienced pilots: The interview technique should start with an initial one-on-one interview. Identify a situation (incident or accident) that was brought to your attention. Simply ask what happened and let them explain in their own words (try not to interrupt). Ask follow up questions to get all the facts. Do not be emotional or condescending or you will loose rapport. Get other facts from witnesses after the interview. Do not get into a debate on what is or is not an incident, the point is anything you feel is important should be looked at. Follow up the initial interview when the remedial safety education action required has been determined. A review of the SOAR technique works well with most pilots but let them make the analysis. More experienced pilots such as instructors will have already done this before the initial interview and follow up interview may not be necessary. If “attitude” appears as a factor the committee technique will be required. Discuss all debriefs with CFI who may also opt to conduct the debriefing themselves if you are dealing with a student and there appears to be a training issue. The main point is that follow up action has occurred from the initial incident.
- e. Dealing with safety hazards when identified. See annex A sect 12 for how to deal with hazards. Also Annex C – *Checklist for Club Safety Program Implementation* will walk you through the steps. Sometimes you will need to take a short term immediate fix to deal with a hazard and then look at it in more detail in you analysis to come up with a longer term solution agreeable to all stakeholders.

5. How to improve safety awareness in your club. Safety culture.

Past articles in free flight have raised the point on the safety culture within the club as being a key element to the success of a safety program. Our SAC safety audit has been and continues to be a valuable tool. Perhaps it is time to also work on a “safety culture audit” as a tool for clubs to determine where they stand with their members on attitudes towards safety. More information on safety culture can be found in Annex A - *Club Safety Program Implementation Training Manual*.

A report on a lecture given by a Dr Hammer, a former professor of Computer Science at MIT, discussed the introduction of technology in “business process re-engineering” and the effect of cultural factors that could impede change. These factors may have an application to gliding. In the report Dr Hammer stated “to change underlying cultural values, leadership requires consistency, relentlessness, and commitment”. He spoke about the climate for changes within organizations and how the culture within the group could work against change. Some of this culture manifests itself as resistance due to inertia of the status quo, fear of

adopting the unknown, and disruption to activities of specialized work of individuals within the group". He made recommendations for doing a "culture audit" as a means to determine the culture climate within the organization. He pointed out that this could be accomplished by focus groups or opinion surveys.

In the report Dr Hammer's comments indicated that there were eight mechanisms to facilitate a change in culture climate. These have been interpreted towards a safety climate change:

- a. Information – (the cornerstone). Dissemination of safety information and requirement to sharing of factors and cause information. (Incident reporting).
- b. Involvement - this should include leadership, instructors and members.
- c. Intimacy- the need to make safety climate a personal issue for participants.
- d. Incentives - positive preferred to negative. A negative safety climate results in injury, loss of life or equipment, and higher insurance rates.
- e. Instructions - make more use of instructor cadre (safety training expanded on instructor courses, clinics, etc).
- f. Inspiration - pooling of ideas, general forum (SAC round table, safety page)
- g. Impetus - selection of champions to promote safety climate. Employ members enthusiastic on safety.
- h. Indoctrination - introduction of safety climate as discussion in curriculum for ground school and initiation to clubs.

Yes, these are a lot of "I" words but the inclusion of these eight items in your safety program should help you change the safety climate of your organization. If you are not certain of the safety climate in your club but are concerned, conduct a safety audit. Example Annex G - *Safety Culture Audit* attached.

6. How to conduct the SAC Safety Audit

The Safety Audit is a valuable tool and a good start point for any new safety officer appointed in the club. It will bring you to all the safety information and safety issues in your club. It will also provide a fresh look at the situation and give you a plan of action. If you are not conducting the audit yourself the following points should help:

- Select a dynamic individual with good interpersonal skills and start with reading the audit completely before starting.
- Review the clubs written material first such as safety program, SOPs, training policies etc.
- Visit and locate key areas identified in the audit manual and determine/assess hazards.
- Interview key personnel in the club, president, CFI, safety officer, maintenance personnel, etc.
- Answer all the questions in the Audit honestly based on info gathered.
- Consider conducting a "safety culture audit" as part of the "safety audit" if you feel the safety climate is not right.
- Discuss the Audit when completed with club leadership including the CFI, safety officer, etc. and file a copy signed by the president of your club so that you have an audit trail that your club has taken responsibility to operate as safe as possible. This will be handy if you have a claim against you.

- Use the Audit to make a checklist of items that require action and set priorities. It is often easier to action those items that are not resource intensive quickly. Involve you club leadership in solutions for those resource items that require a longer-term plan to resolve (such as re-paving a runway). Often there is short term “fixes” that can be done in the interim. This last procedure should be done in your club’s annual safety hazard identification/risk analysis/risk mitigation planning process.
- Forward a copy of the Audit to SAC to form a record that you are showing “due diligence” to action safety concerns. Don’t forget a covering letter to explain your plan.

7. How to complete SAC incident/accident reporting forms

- Common errors: most often the analysis provide looks at the surface “symptoms” and not the root factor. Be careful to look at why the problem occurred. See example incident form.
- Missed information: in order to see if there are issues at the national level, it is important to see all the relevant factors. For example a trend in older aircraft may become apparent but if the airframe times are not recorded this trend may never be noticed. FTSC has determined the information requested on the forms, based on experience, are factors that are relevant in most cases. Don’t forget to look at Human Factors in detail!
- Lack of positive action stated: It is important that some steps have been taken to prevent a re-occurrence. Often action taken by the club SO stated in reports may prove to be a good idea to be implemented at a national level and servers as a source for new ideas. In addition, it serves the user as a record for analysis and action.
- Reports should not identify fault/blame with any person(s), but identify factors that contributed to the event.

8. Special Event and Contest Safety

The safety at contests or special events is largely affected by how the contest is organized and the rules and procedures used. If you act in a safety capacity for a contest you must be involved early in the planning stage. The SAC “Sporting Committee” establishes the recommended procedures for contests and these will control largely the risks or exposure to potential problems. A vigilant watch on how the contest is set up especially deviations from recommended procedures. Contest finish and starting procedures are areas of greater risk. Read the “SAC contest rules” before engaging in contest safety. A safety committee hosting the event should do a good risk assessment before each event. Never under estimate the power of briefings. Experience has shown the person who missed the briefing is likely the one to have an incident or worse.

Contest starts recommended by the Sporting Committee help greatly to reduce risk of mid-air collisions. The start gate consists of a turn circle with a different opening time for each class. Pilot time on course starts when the pilot choose to go through the arc of the circle (within other broad time limits) preventing intense maneuvering activity near the gate as is common in sailboat yachting races. Thermalling may be restricted in the start circle. Other procedures, such as the tow release point being designated at daily pilot briefings and being selected upwind of the start circle, help separate traffic. Also, only permitting left-hand thermalling within 10 km of start circle and left hand circuits for all aircraft widens the safety margins.

Contest finishes are dealt with similarly. The finish circle is designated so that it is crossed in the same direction from final glide, eliminating the riskier requirement to “hook” the gate. Final turn point selection for all classes keeps this final glide/finish consideration. The minimum altitude for the finish is specified and rolling finishes for the low and slow may be allowed. A minimum altitude of 30 meters is safe and still spectacular (some will be lower/higher). Pilots are often required to call 5 km out on final glide to warn other contestants. Pilots landing out are requested to have recovery crews notify contest operations when they departed for a retrieve. This helps to ensure all contestants are accounted for if they did not finish (with pilot/crew cellular phones you run the risk of not knowing a pilot has landed out but suspect the worst).

On course safety is helped by the task committee, which should select routes that do not cause classes of gliders to conflict. Crossing or parallel routes that could result in head on conflicts should not be selected. Turn points should be selected that do not have hazards (parachuting, air traffic, etc) or at least brief the pilots of the hazards before the contest day starts.

Tow plane operations require planning of in/out routes to an up wind release point (easily identified) and daily briefings to tow pilots. Insist tow pilots attend daily pilots briefing (if they don't know what's going on and fly that way, other pilots are quickly annoyed). Tow planes should plan to be at release height by the release point and not circle there (S-turns are sometimes required). Often gliders are taken to a thermal nearby the release point as an alternative reducing returning glider traffic for second tows.

Experience has demonstrated the value of having an accident plan in place. Who does what and who contacts whom, is important. Also, have a spokes person and alternate in place to deal with media and advise participants to refer the media to the spokesperson.

As a final note, other non-contest flying activities should not be allowed during contest launch and finish windows. Parking and vehicle movement, with so many gliders needs to be monitored closely. Small flags or traffic cones can be used to mark parking areas and exit points to separate vehicles and aircraft. Don't underestimate non-flying safety items. The last word is that contest safety requires all of the contest committee to participate and cooperate.

Conclusion

The material in this package has been designed to help clubs and individuals selected as safety personnel or Safety Officers. All information available has not been consolidated in this manual, but it is hoped that it will serve as the start point for gathering information and developing skills that will contribute to a safer and no less enjoyable flying environment. Good luck at implementing your program and performing your safety function.

LIST OF ANNEXES

Annex A	<i>Club Safety Program Implementation Training Manual</i>
Annex B	<i>Template for a Club safety Program Manual</i>
Annex C	<i>Checklist for Club Safety Program Implementation</i>
Annex D	<i>Hazard Identification Form</i>
Annex E	<i>Risk Assessment Form</i>
Annex F	<i>Collection of Various Club Operating Procedures</i>
Annex G	<i>Safety Culture Audit</i>
Annex H	<i>Notes On Incident Analysis For Use In Club Safety Reporting</i>
Annex I	<i>Safety Training and Orientation Program</i>

ANNEX A

to *Safety Training Package for Club Safety Personnel*

SOARING ASSOCIATION OF CANADA

Club Safety Program Implementation Training Manual



SOARING ASSOCIATION OF CANADA

***CLUB SAFETY PROGRAM IMPLEMENTATION
TRAINING MANUAL***

Prepared by the

Flight Training and Safety Committee

2005 June

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SOARING ASSOCIATION OF CANADA
L'ASSOCIATION CANADIENNE de VOL à VOILE

A NON-PROFIT ORGANISATION FOUNDED IN 1945
TO FOSTER MOTORLESS FLIGHT IN CANADA

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1	2005 January 21	Added reference to section 19: Jeppeson (Safety Management Systems) JS312627 - ISBN 0-88487-329-3. <i>Aviation Safety Programs - A Management Handbook.</i>
2	2006 March 17	Minor editorial changes to emphasize cooperative nature of club programs, and desired involvement of all members.
3	2008 March 25	Name and wording changes throughout to reflect structure of Association based on recommendations and not requirements. Wording changed in introduction and section 5 to reflect SAC Safety philosophy. Section 18 additional explanation added.

CLUB SAFETY PROGRAM IMPLEMENTATION TRAINING MANUAL

Introduction

The Association Safety Program recommendations have been produced from *Flight 2005: A Civil Aviation Safety Framework for Canada* and TC publication TP 14135 - *Safety Management Systems for Small Aviation Operations - A Practical Guide to Implementation*. Although these publications were intended for corporate structures, the safety information and recommendations from these documents are explained here to help club safety personnel implement their own programs at the club level. The material enclosed is for educational purpose and may assist clubs in developing their own programs based on sound safety information.

The following elements are used in the drafting of club safety recommendations:

- Using a risk-based approach to identify areas of club operations that should achieve the greatest safety benefit;
- Adopting a data-driven approach to enhancing soaring safety. This includes collecting and making more accessible the type of data that should support a proactive approach to safety;
- Implementing a safety program in the Association and consistent safety management programs in its clubs;
- Recognising the importance of human and organizational factors in safety management; and
- Communicating effectively with clubs and within clubs as data becomes available and new safety initiatives are implemented.

Implementing safety programs - within the Association Clubs is the cornerstone of the National Safety Program (NSP). A safety program should be based on the fact that there will always be hazards and risks. Recognising this, proactive management within all clubs is recommended to identify and control these threats to safety, to lower our mishap rates.

1 An Effective Club Safety Program

Any safety program should have the following elements to be really effective:

- Club leaders' involvement from the start, with the club leadership driving the program
- Involve all members in safety
- Have a deliberate club plan to develop and maintain a positive safety culture
- Maintain commitment, and
- Assess progress.

In recent years a great deal of effort has been devoted to understanding how accidents happen in aviation and other industries. It is now generally accepted that most accidents result from human error. It would be easy to conclude that these human errors indicate carelessness or lack of skill, but that would not be accurate. Investigators are finding that the human is only the last link in a chain that leads to an accident. We will not prevent accidents by changing people; we will only prevent accidents when we address the underlying causal factors.

In the 1990s the term *organizational accident* was coined because most of the links in an accident chain were found to have been under the control of the organization. Since the greatest threats to aviation safety in general originate in organizational issues, making flying in gliders even safer should require action by the organization (the Association and all its clubs).

2 Recommended Club Safety Program

All clubs are recommended to have a systematic, explicit and comprehensive process within their safety programs for managing safety risks. If a club program does not now include these elements, the club should make all efforts to add them or to amend their existing program as appropriate. The program should include goal setting, planning, and measuring performance. It should be woven into the fabric of the club and requires the commitment and participation of club leaders for it to become effective. It becomes part of the culture; the way members participate in running the club. It has four pillars:

Philosophy - Safety management starts with the Club Leaders' Philosophy:

- recognizing that there will always be threats to safety;
- setting the club's standards; and
- confirming that safety is everyone's responsibility.

Policy - Specifying how safety should be achieved:

- clear statements of responsibility, authority, and accountability;
- development of club processes and structures to incorporate safety goals into every aspect of the operation;
- development of the skills and knowledge necessary to do the job.

Procedures - What the directors/club management want people to do to carry out the policy:

- clear direction to all members;
- means for planning, organizing, and controlling; and
- means for monitoring and assessing the safety status and progress in the way the club operates.

Practices - What really happens in flying and on the flight line:

- following well designed, effective procedures;
- avoiding the shortcuts that can detract from safety; and
- taking appropriate action when a safety concern is identified.

The organizational structures and activities that make up a safety program are found throughout a club organization. Every member contributes to the safety-health of the club as a whole. The safety initiatives can be integrated into *the way things are done* throughout the club's operations. The implementation and continuing support of a coherent safety policy that is developed and managed by the directors can achieve this.

3 Club Leadership Initiatives

Initiatives by the club leaders are not always successful and each time a new idea is introduced people ask whether this is a worthwhile initiative, or a fad that will pass soon enough. Having a good idea does not guarantee success. Many good ideas have failed in practice because one or more of the three critical elements was missing: commitment, cognizance, and competence. These three "C"s of leadership will determine in large part whether the safety program achieves its goals and leads to a pervasive safety culture in an organization:

- **Commitment:** In the face of operational and other pressures do the club leaders have the will to make the safety program elements work effectively?
- **Cognizance:** Do the leaders understand the nature and principles of managing for safety?
- **Competence:** Are the safety program policy and procedures appropriate, understood, and properly applied at all levels in the club organisation?

4 What is a Safety Culture?

A club's culture is defined by what the members do and think. The decisions people make tell us something about the values of the organization. For instance, the extent to which the club leaders and pilots act on commitments to safety tell us more than words about what values motivate their actions. A desirable safety culture may be slow to mature, but with leadership support it can be accomplished.

A safety culture is:

- **An informed culture**
 - people understand the hazards and risks involved in the club's flying and maintenance operations, as well as in their and other pilot's flying
 - members work continuously to identify and overcome threats to safety
- **A just culture**
 - errors should be understood, but willful violations cannot be tolerated
 - the members know and agree on what is acceptable and unacceptable
- **A reporting culture**
 - pilots are encouraged to voice safety concerns
 - when safety concerns are reported they are analyzed and appropriate action is taken
- **A learning culture**
 - people are encouraged to develop and apply their own skills and knowledge to enhance organizational safety
 - members are updated on safety issues by club leaders
 - safety reports are fed back to members so that everyone learns the lessons

How to Encourage a Positive Safety Culture

- Club directors/leadership practices what they preach regarding safety;
- Involve all members in the club Safety Program;
- Club leaders allocate adequate resources to maintain an operation that is efficient and safe;
 - Club leaders acknowledge safety concerns and suggestions;
 - they give feedback on decisions, even if the decision is to do nothing;
 - if no action is contemplated, that decision is explained; and
 - feedback to reporters / members is timely, relevant and clear.

Traditionally, safety has been about avoiding costs. Many clubs have been severely affected and have shut down by the cost of a major accident. This makes a strong case for safety. Safety pays off in reduced losses and is good for the soaring movement in general but more specifically is good for the club's continued health (financial and emotional) and its members' enjoyment.

A good safety program provides a club with the capacity to anticipate and address safety issues before they lead to an incident or accident. It provides the club leaders/directors with the ability to deal effectively with accidents and near misses so that valuable lessons are applied to improve safety.

The basic safety process is accomplished in six steps, Figure 1 below:

- A safety issue or concern is raised, a hazard is identified, or an incident or accident happens;
- The concern or event is reported or brought to the attention of club leaders;
- An acknowledgement that the report has been received is sent to the initial reporter(s), or an acknowledgement is written in the club newsletter, etc;
- The event, hazard, or issue is analyzed to determine its cause or source;
- Corrective action, control or mitigation is developed and implemented; and
- The corrective action is evaluated to make sure it is effective. If the safety issue is resolved, the action can be documented and the safety enhancement maintained. If the problem or issue is not resolved, it should be re-analyzed until it is resolved;
- Feedback and lessons learned are provided back to the initial reporter(s) and the general club membership. Eventually a club is proactive in dealing with most hazards/risks before they become accidents.

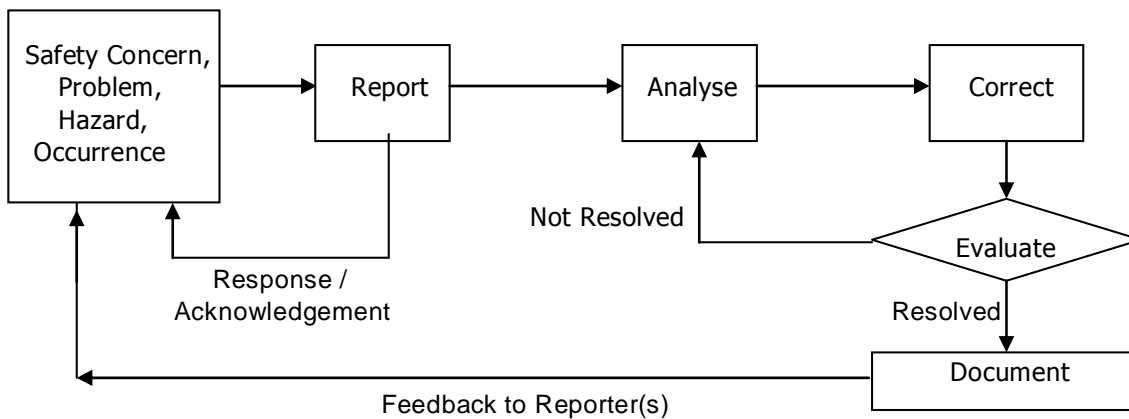


Figure 1. The Basic Safety Process

5 How does this System differ from the past approaches?

The traditional flight safety approach depended on a safety officer often reporting to the CFI or the club's president. The safety officer's effectiveness depended on his or her ability to persuade the club leaders/management to act on safety information. In other cases, all safety issues were left to the individual pilot and little organizational assistance may have been provided. The proposed changes to club's safety program explained in this training manual suggest that club leaders should be responsible for taking safety-related action or inaction as part of general club management and in the best interests of general club safety and flight safety.

The safety program philosophy now recommends that responsibility and accountability for safety management and oversight be retained within the management structure of the club and not delegated to the safety officer or CFI alone. The directors should be responsible for safety management, as they are for protecting the club assets of aircraft and facilities, and for all the other aspects of the club. This is not to imply that pilots are not responsible for their own safety. Ultimately, each pilot as PIC, is responsible for their own safety. However, improving safety should be a shared responsibility.

6 Some Features of the Safety Program

When a club first implements safety management into its procedures, these have to fit into the organization's structure and culture. Safety management has to be comprehensive, but should not be more complex than the rest of the club's management program. Safety management should be compatible, and preferably, integrated into the overall management scheme. At the present time gliding clubs and indeed the Association are not required by law to implement SMS into their operations, as are large aviation organizations. However the Association is promoting such a system at the national level and recommends that clubs follows a similar process as outlined here. The following list will be helpful to the club leaders who want to know more about how to make safety management a reality. Most items in this list will be familiar to club leaders. They are already part of the safety landscape. The fundamental changes are concerned with roles of club leaders and the Association.

1. Senior Club Leaders' commitment
2. Safety Policy
3. Safety Information
4. Establishing Safety as a Core Value
5. Setting Safety Goals
6. Hazard Identification and Risk Management
7. Establishing a Club Safety Reporting System
8. Safety Audit/Assessment
9. Accident and Incident Investigation and Reporting
10. Safety Orientation and Recurrent Training
11. Emergency Response Plan
12. Documentation

7 Senior Club Leaders' Commitment

Regardless of the size, complexity or type of operation, there is no doubt that the club leaders play a major role in determining the club's safety culture. Club leaders here are defined as board members as well as competition pilots, experienced cross-country and other *old hands*, in fact the *pundits*. Without the wholehearted commitment of the club leaders, any safety program be ineffective. Safety will succeed to the degree that the senior leaders devote the time, resources, and attention to safety as a core club management issue at the same time involving all club members in the program.

Benefit - Solid commitment ensures that management of safety is given sufficient attention and resources.

8 Safety Policy

The club leaders' commitment will not lead to positive action unless that commitment is expressed as direction. Senior management can develop and communicate safety policy that allocates responsibilities and could hold people accountable for meeting safety performance goals. In some small clubs, policies may be informally communicated while in other larger clubs, their policies have to be documented and communicated through more formal channels.

Safety Policies should include, at a minimum:

- a clear declaration of commitment and objectives;
- a means for setting safety goals and regular review of safety performance;
- clear statements of responsibility applying to every aspect of the club operation;
- clearly stated accountabilities converging at the top, i.e. with the club's management team;
- a means for ensuring adequate safety management knowledge and skills at all levels; and
- compatibility or integration into the club's organisational structure and its management system.

Once the policies are defined, procedures should be devised to implement the policies. Procedures should be consistent with policy and appropriate for the members responsible for performing them. Well thought out procedures help ensure that practices are consistent with the policies. Remember that the overall program will offer substantial benefits only when all club members are involved.

Benefit - Club leaders are confident that members understand and accept that they have important roles in ensuring safety.

9 Safety Information

Club directors, or management, depend critically upon information to make decisions and lead the organization. Club leaders and members should be able to access and use safety information relating to the club's own performance. Therefore, club leaders should establish a system to collect and analyze safety data. This would include:

- safety goals and evaluation of progress towards those goals;
- records of accidents and incidents including internal/external investigation findings and corrective actions;
- safety concerns raised by members including analysis and resultant action;
- results of safety reviews and audits and when appropriate, corrective action; and
- records of all safety initiatives or interventions.

The safety information system should be sufficient (not overly large or complex) to meet the club's needs. A small club may be able to keep all the relevant information in a small file.

Club leaders and members should also be looking outward and keep up-to-date on the latest developments in flying safety. Keeping current on safety provides a better background for understanding aspects of the club's safety condition and developing novel solutions to difficult problems. This is accomplished by subscribing to safety related publications, making relevant accident reports available, and encouraging all club members to participate in safety related training, seminars and workshops.

Benefit - Safety data and information are available to the members who need it to perform safely around the club and when flying.

10 Establishing Safety as a Core Value

Safety is not accomplished solely by the member, club leadership, or by any other individual. Safety involves everyone. A positive safety culture is invaluable in encouraging the kind of behaviour that will enhance safety. Positively reinforcing safety-conscious actions sends the message that club leadership cares about safety.

The best way to establish safety as a core value is to make safety an integral part of club management. Setting safety goals and holding leaders and members accountable for achieving those goals does this. To be effective, goal setting requires practical, achievable goals that can be verified, and safety goals are no different. Goals should be set and deadlines established for meeting them. Leaders should follow through and hold those responsible to account for their progress toward the goals. Success or failure in meeting safety goals should be treated in the same way as success or failure at meeting any other types of goal.

Many organizations hold safety meetings from time to time. This is a good idea, but if safety is a core value, safety implications should be raised and addressed as a normal part of doing business. When flying operations or financial concerns are discussed, associated safety issues should be considered as well. For instance the selection of new equipment will probably involve evaluating factors like training, purchase price, operating costs, and maintenance. Safety aspects of the purchase should also be considered. Requiring that safety be a part of every club decision underlines the importance of safety and ensures that safety is a normal part of the way all jobs are done.

Benefit - Members become stakeholders in safety management, ensuring its effectiveness.

11 Setting Safety Goals

Goal setting is vital to any club's performance. All organizations have their own ways of setting and expressing goals. In some organizations the goals are not stated very explicitly. Other organizations set goals formally and document the process. Regardless of how management goals are set, few organizations are good at developing safety goals. The most common weakness in setting safety goals is focusing on outcomes. This usually means counting accidents, but we know that safe clubs can have accidents while less safe operations can be lucky and avoid accidents. Although the ultimate goal is *no accidents*, there are more precise and useful ways of measuring safety than counting accidents, especially in a safe system.

Professor James Reason of the University of Manchester, a leading authority in the management of safety, compares managing safety to "fighting a guerrilla war in which there are no final victories." It is a never-ending struggle to identify and eliminate or control hazards. We will never run out of things to do to make the system safer. Sound management requires that we identify them, decide how to achieve them, and hold ourselves accountable for achieving them. Risk management procedures can help leaders decide where the greatest risks are and help set priorities. Sound safety goal setting concentrates on identifying systemic weaknesses and accident precursors, and either eliminating or mitigating them.

Benefit - Clearly stated goals lead to a commitment to action which will enhance the safety of an organization.

12 Hazard Identification and Risk Management

A hazard is a condition with the potential of causing injury to personnel, damage to equipment or structures, loss of material or assets, or reduction of the ability of members to enjoy their chosen sport as they would want or to do an assigned task that is part of the safe operation of the club.

Risk is the chance of injury or loss. This concept includes both the probability of a loss and the magnitude. Hazard identification and risk management should be undertaken at a minimum:

- during implementation of an improved safety program and then at regular intervals;
- when major operational changes are planned;
- if the club is undergoing rapid change, such as growth and expansion, offering new services or programs, cutting back on existing ones, or introducing new equipment or procedures; and
- when key personnel change.

Transport Canada Civil Aviation has adapted the Canadian Standards Association Q850 decision-making process for risk management. We suggest clubs use a similar approach when assessing and managing their risks. The Civil Aviation approach calls for seven steps:

1. Initiate the Process
2. Perform Preliminary Analysis
3. Estimate Risk
4. Evaluate the Risk Activity
5. Control Risk
6. Take Action
7. Monitor Impact

Benefit - Hazard identification and risk management provide the information needed to control risk at acceptable levels.

13 Establishing a Club Safety Reporting System

Gliding is a dynamic activity and conditions are constantly changing. To alert club leaders that something has changed, or a new hazard is emerging, clubs need input from all levels. Members should have a way to report hazards and safety concerns as they become aware of them and every member should know how to report their concerns.

When a member reports a concern or hazard, the report should be acknowledged and analyzed. Acting on reported safety concerns will build members' confidence in the system. If, however, a reporting system is not maintained and attended to, people will quickly stop using it. Some major aviation organizations are required by regulation to institute a reporting system. A system that glider pilots do not trust or use will not fulfill these new recommendations of the Association.

Any safety concern should be reported. To assist clubs in identifying safety concerns that they should look at, here are some potential real life examples:

- high workload for flight-line personnel during multiple towplane operations;
- poor communication between pilots, ground crew and towpilots/winch operators;
- pilots rushing through pre-launch checks;
- inadequate checklists (e.g. for rigging, or for cross-country flights);
- feeling fatigued and being pressured into "taking one more flight";
- unsafe ground operations;
- poor communication regarding maintenance requirements (flying with minor snags) ;
- difficulty obtaining parts;
- poorly designed or unused flight cards by instructors;
- lack of emergency equipment, procedures and training;
- vehicles left close to runways and aircraft, or in unauthorized areas;
- launching incorrectly ballasted glider (e.g. overweight or very light passenger/student);
- confusing signs (access control for members of public to active runway areas);
- failing to maintain good control of flight operations by *duty pilot* or other club leaders.

Not all safety concerns require a special reporting system. Some should be made on existing paperwork, such as the standard report form or the *blue book* (this is designed to be an anonymous reporting method - if the club does not have a blue book, an alternate method should be available). It is fairly easy to create a form or procedure.

The report be analyzed to determine whether there is a real threat to safety and if so, what needs to be done. When the issue requires action, that information should go to the person who has the authority to take the action. This preserves the accountability of the club safety program. The credibility of the system is preserved when the outcome is fed back to the reporter. If it is decided that no action is appropriate, that information, and the reasons for that decision also should be fed back to the reporter. What really matters is that all club members know how to report safety concerns and that their reports are acknowledged, analyzed, and resolved in a timely manner.

Benefit - Members have a way to bring their safety concerns to the people who can do something about them.

14 Safety Audit/Assessment

Safety audits or assessments should be conducted regularly (in industry they may be required by regulation). These assessments should ensure that correct procedures are being followed and should normally resolve any problems or misunderstandings. Any safety assessment should include the activities of outside contractors or others that could affect the safety of the club operation. Examples include maintenance operators, other users of the airfield, or airport operators.

Small clubs do not need a special group to plan and conduct regular internal audits. They do, however, need to know what is going on in the club. Are members following procedures, particularly when instructors are not around? If not, why not? In a larger club, a special group may be responsible for planning and conducting safety audits/assessments. Regardless of who takes on the responsibility, an audit or assessment should be conducted regularly.

Benefit - Club leaders are assured on a regular basis that club practices, its policies, and procedures are correct and consistent, and that the directors are alerted when an area needs attention.

15 Accident and Incident Investigation and Reporting

Fortunately, accidents are rare. Incidents, however, are much more common. Furthermore, incidents and less serious accidents are often wake-up calls that can alert members and club leaders to hazards, risks, or possibilities that they had not considered before. Every incident and accident is an opportunity to learn valuable safety lessons. The lessons will be understood, however, only if the occurrence is analyzed so that club leaders and members understand not only what happened, but **why** it happened. We need to investigate and analyse human error in aviation to cover the latent and active failures that are implicit in the *holes* in the *Swiss Cheese* model of accident causation. The Association has modified the Human Factors Analysis and Accident Classification System, HFACS, to be applicable also to soaring incidents and accidents. Assistance is available through the Association to help improve the quality and quantity of data gathered in accidents and incidents.

Every incident and accident should be reported and investigated. The investigator, or team of investigators should be technically competent and either possess or have access to background information so that facts and events are interpreted accurately. The investigator should have the confidence of members, and the investigation process should be a search to understand how the mishap happened, not a hunt for someone to blame.

The investigation report should go to the responsible club leader who has the authority to act on the findings.

Benefit - Club members learn from investigating incidents and are able to remove hazards or strengthen defences as recommended.

16 Safety Orientation and Recurrent Training

New members should be trained in how safety is managed and encouraged to adopt the safety philosophy, policy, procedures, and practices of the club.

Over and above the regulatory requirements for specific training and checks, ongoing training should be accorded a high priority. The commitment to provide both relevant orientation training to new members, and ongoing refresher/recurrent training for all members is an essential element of any safety program.

In a small club, sitting down with new pilots, or briefing as you show them around and introduce the other club members, may be a good way to introduce your club's safety philosophy. A larger club would be well advised to train all new members on the club's approach to safety. It could be part of existing orientation programs or delivered separately by specialist members.

Benefit - All members understand how safety is managed and what is expected of them to make it effective.

17 Emergency Response Plan

As stated previously, accidents are rare. This is good news. The bad news is that a good safety record can lull us into complacency so that if something really bad does happen, we may not be prepared to deal with it. Every aviation organization, operator, service provider, maintenance organization, and airport should have an emergency

response plan. So could all gliding clubs. The survival of the club can depend on how it handles the first few hours or days following a major accident.

An emergency response plan outlines in writing what should be done after an accident happens, and who is responsible for each action. When the plan is adopted, relevant members should be briefed on the plan and their responsibilities. Appropriate members should receive training in emergency response procedures.

The plan should be readily available and a copy should be at the flight line of all clubs as well as in the club house and where the club phone is located for example.

The Plan should:

- be relevant and useful to people on duty at the time of an accident;
- include checklists and emergency contact details;
- be updated when contact details change;
- be exercised to ensure its adequacy and the readiness of the people who could make it work; and
- copies could be delivered to the emergency response centre, and police, ambulance and fire services that would respond to an emergency at the club.

Benefit - Members should know what to do in the event of an emergency or accident and emergency services should be able to respond quickly at the club.

18 Documentation

The club safety program should be formally documented in a manual, directives and/or instructions.

Documentation should include:

- a policy statement from the Club Executive;
- the reporting chain and responsibilities of key members;
- the hazard identification and risk management process;
- the safety reporting procedures of the club;
- audit/review and reporting processes; and
- all other activities of the program.

Records should be kept of:

- all activities related to identification of hazards, risk assessment, and actions taken;
- results of all investigations of accidents and incidents, including analysis and actions taken;
- all safety reports issued or received including analysis and actions taken;
- any safety recommendations;
- findings of internal audits, assessments and program reviews;
- club leaders' actions; and
- annual program reviews and safety reports.

Documentation should be tailored to the needs of the club. Without documentation to support safety training you may find new pilots repeating old mistakes. In addition when personnel changes occur, new appointees may not have a sense of what has been done or where the club's safety program is going. Past efforts are often lost or initiatives lose momentum because the original reasoning is lost.

Benefit - Safety policy, responsibilities and procedures of the safety program are documented and available.

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We acknowledge with thanks the work of Transport Canada and their publication TP 14135 - Safety Management Systems for Small Aviation Operations - A Practical Guide to Implementation, which was used as the basis for this guide for gliding clubs in Canada.

Prepared by the Flight Training and Safety Committee.

ANNEX B

to Safety Training Package for Club Safety Personnel

SOARING ASSOCIATION OF CANADA

Club Safety Program Manual

Recommended Practice Series



SOARING ASSOCIATION OF CANADA

***TEMPLATE FOR A
CLUB SAFETY PROGRAM
MANUAL***

First issued 2006 Mar 15

Revised 2008 Mar 25

SOARING ASSOCIATION OF CANADA
L'ASSOCIATION CANADIENNE de VOL à VOILE

A NON-PROFIT ORGANISATION FOUNDED IN 1945
TO FOSTER MOTORLESS FLIGHT IN CANADA

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Template for a Club Safety Program Manual

Preamble

This Recommended Practice is provided to enable a club to set up a Safety Program Manual for the club if it does not now have one, or to amend its current manual to add some items that are included here. This is not a requirement on clubs but is provided to offer a template safety program that will assist clubs to operate in a safe and responsible manner for the club members and the public at large. This is an example of what a club safety manual could look like and would be the end product that your club would use to implement your program with a copy sent to SAC.

The Safety Program Manual should include an amendment section at the front, a club safety policy statement, and a statement defining who in the club is responsible for its annual review. It is also recommended that a statement precede the operations sections of the manual to state that the sport of soaring carries a certain level of risk, including the possibility of serious injury or death, and that members who participate in the club activities are voluntarily assuming this risk.

Once the club Safety Program Manual is updated, or a new manual drafted and *agreed*, it should be approved by the club BoD. The current and future club BoD should be the ones who drive the program within the club. The program should have a *champion* to keep it a working system, and this is the Director for Safety, otherwise it will be forgotten quickly and not used. Above all the safety program should be dynamic and receive the full support of the club's Board of Directors. By identifying safety as a core interest of the board and by seeking the full co-operation of all members, the club's program will begin to have an impact nationally to improve safety overall.

The following sections show the suggested wording that may be amended as required (cut and paste) to suit the club. By including all elements contained in the Club Safety Program Standard and that are illustrated in this document, a club will be able to meet the SAC objectives for improving safety nationally.

FTSC
2008 March 25

Revision History

Revision No.	Date	Details of Revision
1	2008 March 25	Changes made to wording to reflect Association structure.

1 *[insert your club name here]* Safety Policy

The *[insert you club name here]* strives to operate as a safe and efficient gliding club. Recognizing that all activities have an associated risk, part of the gliding club strategy to ensure safety should be to identify and minimize risks wherever possible and foster an open environment for feedback from all members. This includes but should be not limited to the areas of flying operations, training programs, maintenance, planning, and security.

All club members should work together to develop a safety culture in which all pilots are interested in and dedicated to improving safety. The Board of Directors (“Board”), Director for safety (“DS”), Chief Flying Instructor (“CFI”), and Safety Officer (“SO”) should work together to reflect these objectives.

All members should be encouraged to think pro-actively about safety and to bring forward ideas or recommendations to improve the safety of the club. This should reduce the number and cost of flying accidents.

President

[insert you club name here]

Statement concerning Risks

Gliding is a sport that carries with it a certain degree of risk, including the risk of serious injury or death. Members and other persons who choose to participate are voluntarily agreeing to assume these risks.

2 Structure and Role

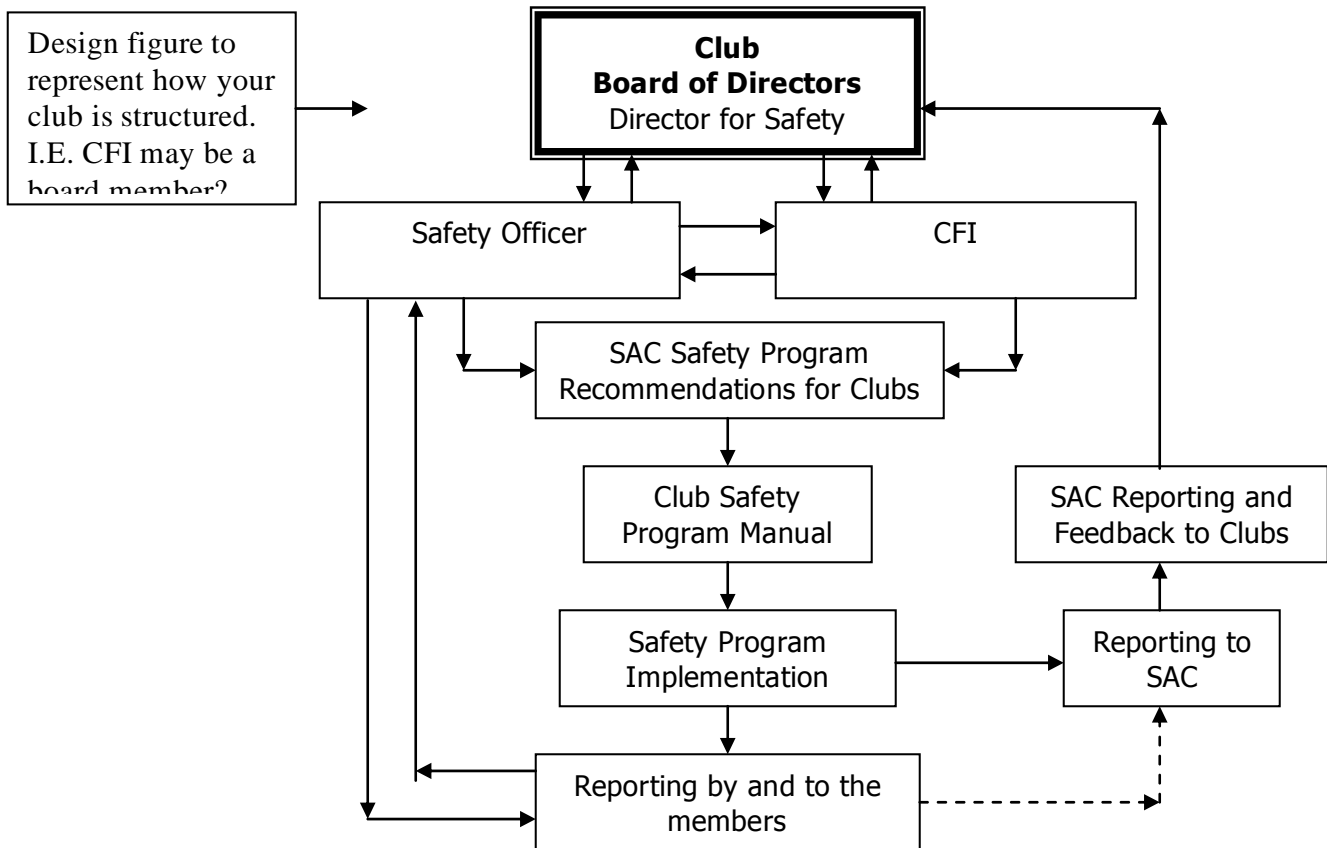
The Club Safety Program

The objectives for this program are to work together to cultivate a safety climate within the club that will promote safety. *A team approach is essential.* The aim within this club is to develop a Safety Culture to include all pilots who are equally interested in and dedicated to improving safety all the time. The Board of Directors, Director for safety, Chief Flying Instructor and Safety Officer should work together to reflect these objectives.

Roles

Following each Annual General Meeting of the club, the Board should appoint (or re-appoint) a member of the Board as the Director for Safety (DS). The DS should oversee implementation of the club safety program and regularly report to the Board and at each general meeting of the club. Program implementation may be delegated to the SO. In the absence of a DS, the SO should be appointed to the Board as a non-voting director. The DS and SO should ensure the safe operation of the club in all ground and flying operations. Both the DS and SO should report to the Board. The club safety program should be the responsibility of the DS, who should regularly and in conjunction with the CFI and other pilots, as required, undertake a complete review and update of the safety program and amendment of this manual as appropriate.

The CFI should be oversee all flying and training activities.



Meetings

Safety should be discussed at all Board, general and other club meetings as a standing agenda item.

Reporting (within the club and to SAC)

The club SO should review the *Blue Book* and other incident reports at least weekly and take action on each by acknowledging receipt to the reporter(s), investigating, providing feedback to the reporter(s), and publishing any feedback in the club newsletter or by notice.

An accident or incident report should be filed by those involved after all accidents and incidents that could have led to an accident if preventative actions had not been taken, regardless of whether the pilot(s) concerned is/are members of the club or flying in a privately-owned glider. This report should be additional to the report that goes to the Transportation Safety Board of Canada (TSB)¹ and the insurance company for making a claim. See Appendix B for the requisite form. These reports should be submitted to the SO, who, with the CFI, should follow up. Minor incidents should be tracked and if a series of similar incidents are detected, appropriate actions should be taken by the SO.

Copies of all accident and incident reports should be sent by the club's SO to the SAC Head Office as soon after the event as possible. These reports should include explanations of measures taken to prevent a similar accident or incident in the future. These reports should then become part of the regular review process for safety improvements in the club. If club pilots do not report, the SO can forward a report based on their investigation.

SAC should provide feedback to clubs on reports received and the making of related recommendations to all clubs as appropriate through the club Boards, CFIs, SOs, *FreeFlight*, or regional seminars. When such feedback is received by any of these club leaders, they should publish and disseminate the information to club members through the club newsletter, electronically, and by posting in the clubhouse.

At the end of each season, the club should send a copy of the club's end-of-year safety report to SAC. This report should include the club's incident/accident analysis summary and strategies and/or recommendations for avoiding the same incidents and reducing hazards. Members of the club should be encouraged to report details of incident/events or procedures that they consider unsafe anonymously to SAC.

Under no conditions should a member of the club be blamed or disciplined as a result of an incident or accident, or for making a safety-related report, unless the member shows negligence, disregard for rules or regulations, or has criminal intent. This should not prevent the club from altering flying privileges, e.g. to require extra dual training.

¹ Depending on the nature of an accident, the TSB may not carry out a thorough investigation but may instead produce a factual report. Assistance may be requested to analyze incidents and, more particularly, accidents, by an outside person or persons. The SAC, through the FTSC, may perform a separate investigation and should assist clubs to complete the analysis and reporting by visiting the club and talking to its members on request. Either the club or the SAC may initiate a request that this assistance be provided. The findings and recommendations for safety improvements in the SAC report should then be entered in the club's risk assessment and mitigation program and be reviewed immediately.

Program Assessment

During operations, all members should monitor the risk factors contained in the club's Risk Assessment and report any deficiencies, as in iii above.

The CFI, SO, Chief Tow Pilot, DS, and President should regularly review the club's Risk Assessment and safety audit to verify that any corrective action plan implemented appears to be effective and meets the objectives of the club's safety program. A checklist of the actions required under this Safety Program is contained in Appendix A

3 Risk Management Process Identification of Safety Issues

Safety issues may include but are not limited to operational practices and/or changes in operations, flying practices, human factors, third party suppliers such as maintenance companies or individual AMEs, airfield environment, or any other perceived area of safety concern.

4 Risk Areas, Safety Goals, Performance Measurement Targets and Safety Performance Objectives

Annually the club's CFI and SO, plus other club directors and selected members should review the following lists and make changes and additions as necessary. The Director for safety should maintain the club lists in separate readily retrievable paper files with the club secretary for annual retrieval, review and update.

4.1 Safety Management of Risk Areas – see also section 8

Annually the club, under the leadership of the Safety officer, shall review the list generated in previous years, by running (brain-storming) sessions with a cross-section of club members to identify possible additional hazards, derive their associated risks (the **Risk Assessment**) and subsequently to develop **strategies** to handle and reduce these risks – see Appendix A for schedule. The risk assessment process is described in Appendix C.

The club should manage the following hazards. This is not a complete list; additional hazards may be threatening the club. Areas to look at include all facets of the operation, including flight-line and maintenance procedures, the airfield, new aircraft, etc.

- Safety – airfield layout and operation (including multiple users);
- Training standards – ab-initio training consistency between instructors and other clubs;
- Safety Training – all pilots getting this training (include in audit)?
- Performance of club safety audits and submission to SAC both inconsistent;
- Safety Culture – need to continue work towards a *generative safety culture*;
- Instructor training and currency variations across the instructor cadre;
- Type-Conversion Training – requirements available and adequate?
- Pilot low time/currency each season, and
- Pilot skill level self-recognized.

4.2 Club Safety Goals

The club has the following safety goals:

- Safety issues are to be on the agenda of all club Annual and Special Meetings, BoD meetings, seminars, and courses, whether or not there is a specific safety item for discussion;
- Perform internal (CFI) audits and Safety Audits and external Safety Audits as a top priority;
- Annually review the Safety Program, including the *Risk Assessment* by reviewing and identifying hazards and associated risks and risk areas to the club and making adjustments;
- Review the club's safety training program and adjust annually to reflect feedback;
- Review and develop *mitigation strategies*, and list the risks for action at the BoD level to first address the identified high-consequence risks;
- Improve the quality of the club's SOPs, and manuals, recommended practices, etc., with safety in mind and co-ordinate with other airport's stakeholders/residents;
- Provide regular safety training for new members, and recurrent training/reviews for all members;
- Reduce severity/frequency of preventable accidents/incidents, and thus reduce the insurance costs;
- Improve reporting (to club members through weekly email summary of pilot meeting safety points and to the Association), and
- Improve on feedback to members from internal analyses of past incidents/accidents and from the feedback received from SAC.

4.3 Performance Measurement Targets

The club's stated targets and performance objectives are to be audited each year, this to include the following from the two lists below. Safety performance is a difficult subject to measure! However there are certain activities that can be monitored from one year to the next to gauge progress. Others should be considered and added to this list:

- Address the identified high-risk hazards by setting goals and targets for completion of tasks;
- Increase incident/accident reporting within the club and to the Association;
- Increase/improve safety feedback within the club;
- Reduce number of safety related incidents, and
- Improve analyses of past incidents and subsequent feedback to members.

4.4 Safety Performance Objectives

[Below is a sample list of Safety Performance Objectives. They may or may not be applicable to any particular club.] The club should:

- Encourage all members to increase seasonal flying activity/currency through promotional and financial incentives developed by the club BoD;
- The CFI to sign-off on safety training of new members and at recurrent safety training seminars/workshops (annual spring safety meeting) at the club;
- Improve conversion and upgrading of skills training within the club;
- Perform CFI audits (internal to the club) annually;
- Complete an **internal** Safety Audit annually (a significant portion of this audit should include a review of the SOPs or orders, the club's operations in general, and a review of the Risk Assessment);
- At least once every two years a copy of the completed safety audit shall be sent to the SAC Head Office;
- Continue communications with airfield stake holders to improve safety;

- **External Safety Audit:** Once every three years the safety audit should include a non-club member on the audit team to qualify it as an external audit. Such an audit should be completed:
 - prior to commencing operations under these standards, and thereafter, as determined by the club’s Risk Assessment;
 - for cause, such as after an accident or an unsatisfactory internal safety audit; and
 - in the event that the club changes aircraft types, or introduces a new type, or the Risk Assessment shows a significant change in the operation.
- A copy of each completed **external** audit report shall be sent to the Association’s Head Office.
 - Note:** Copies of all audit reports, including club management approved corrective actions, shall be retained by the club for a minimum of three years.
- The club is to request assistance either from SAC or other outside persons, preferably with industrial safety program experience, when an external Safety Audit is to be performed; and
- The **Safety Culture** in the club is to be promoted by club leaders to influence pilot behaviour towards a *generative* culture.

5 Safety Analysis and Reporting Process

It is important that all members in the club, particularly those involved with the safety program understand the basic safety process. The club in several steps, Figure 1 below, accomplishes it:

- A safety issue or concern is raised, a hazard is identified, or an incident or accident happens;
- The concern or event is reported or brought to the attention of club leaders;
- An acknowledgement that the report has been received is sent to the initial reporter(s), or an acknowledgement is written in the club newsletter, etc;
- The event, hazard, or issue is analyzed to determine its cause or source;
- Corrective action, control or mitigation strategies are developed and implemented; and
- The corrective action is evaluated to make sure it is effective. If the safety issue is resolved, the action can be documented and the safety enhancement (risk reduction) implemented. If the problem or issue is not resolved, it should be re-analyzed until it is resolved;
- Feedback and lessons learned are provided back to the initial reporter(s) and the general club membership.

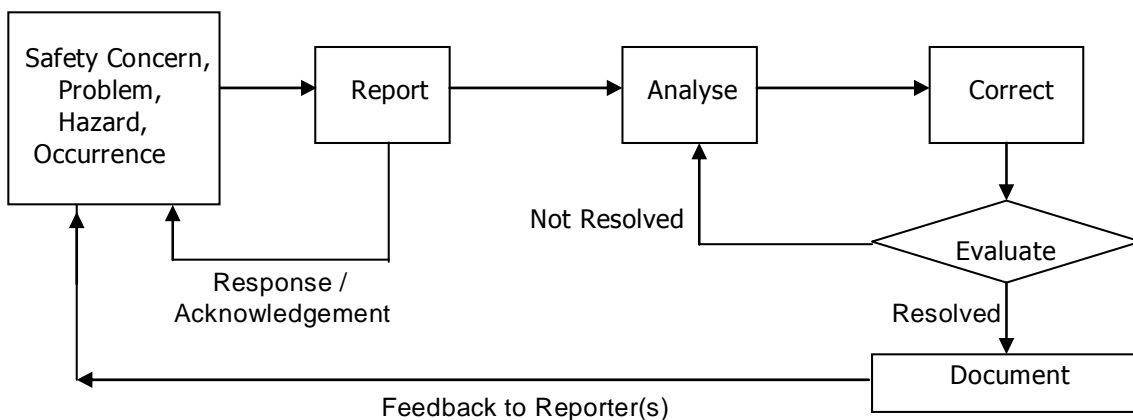


Figure 1. The Basic Safety Process

The club’s internal system for reporting of serious incidents and accidents as they occur during the season is to use an incident/accident report form available at the flight line – see Appendix B. In addition, the *Blue Book* also located at the flight line is to be used to express and report safety concerns,

and to report less serious incidents. A report shall be filed if an incident has a more serious safety concern that could have led to an accident had preventative or avoiding actions not been taken.

Members are encouraged to use the *Blue Book* and to give their name for follow-up. However, the club program (and the SAC program) permits anonymous comments or reports, should the reporter feel that he or she might be sanctioned, for example, for a safety observation. Because of the very nature of anonymous reporting it is not possible to acknowledge receipt of such reports to the authors; however feedback should be provided as far as possible to acknowledge the value of these reports.

Following receipt of a report on an incident or safety issue, acknowledgement should be given in a timely manner by the SO to the reporter directly or through the club newsletter, etc. After an analysis of the root causes and strategies to reduce the likelihood of a repeat incident show that the issue or hazard is likely to be resolved, the conclusions shall be documented and fed back to the person who reported the incident (assistance is available from the SAC if requested). At the same time this feedback shall be given to all club members through the club newsletter, etc., as appropriate. The same process is to be used for accident reporting within the club.

6 Risk Assessment and Prevention Methodology

The steps to be taken by the SO are shown in Appendix C to be used for the annual *Risk Assessment*. When this is completed, not only will the risks have been categorized but a *Prevention Strategy* will have been produced. The BoD shall implement this through the CFI in conjunction with the SO and instructors, and other club members as appropriate, such as the maintenance director. A checklist of these actions shall be published, and followed up on a regular basis and at the following year's annual review and safety audit.

7 Recognition at the Club and National Levels

Individual efforts towards safety, and the promotion of flight training to high standards are critical parts of the club's Safety Program. Members of the club therefore are encouraged to work towards the club's annual awards for safety and training. The club's Safety Award will be presented annually to a club member who has contributed to the improvement of safety in the club. Any member can make a nomination to the SO/CFI who should recommend the award winner to the club BoD for final approval in November each year. [*enter details of club's program, including how members are nominated, criteria used for each award and how it is judged, and by whom and when. This could include immediate recognition for each action or contribution through write-ups in the club newsletter, or by awarding a special safety plaque for example, at a club function during the year*].

At the national level, SAC recognises the efforts required, and annually awards trophies to the top instructor of the year (the Walter Piercy trophy), and for the best contribution to safety by an individual, group or club (the Hank Janzen trophy). The club should nominate suitable candidates for these national awards.

8 Emergency Response Plan

The club's emergency response plan is to be included in the club's standard operating procedures (SOPs) manual. The plan is to be posted in a prominent position at the flight line and near each telephone at the club, and this known to all members. Copies may be forwarded to local emergency services as required.

The plan should contain as a minimum, immediate actions that should be started as soon as possible under an *Emergency Coordinator* (senior club member who is present) who shall immediately take charge. The plan is to include further sections on: Follow-up Actions, Notification of Authorities and any other tasks such as handling of the media.

The *Emergency Coordinator* is also to complete a brief report immediately for the CFI, SO and Board of Directors who shall notify the *insurance company* and SAC. This is to be followed-up with the required SAC accident report form (previously given to the pilot(s) concerned if uninjured) and handed to the CFI and SO for sign off and forwarding to the SAC National Office.

NOTE: All club members are expected to comply with the directions given by the Emergency Coordinator. All club members should not comment publicly about the accident or make statements of liability.

9 Documentation

This manual may be amended at any time. After an amendment is approved by the BoD, copies on the manual or amendment pages shall be distributed to manual holders to ensure updated manuals only are used by members.

Records should be kept of:

- all activities related to identification of hazards, risk assessment, and actions taken;
- results of all investigations of accidents and incidents, including analysis and actions taken;
- all safety reports issued or received including analysis and actions taken;
- any safety recommendations and *safety alerts* issued to club members (by e-mail, club newsletter, posting on club notice board, etc);
- reports of the Emergency Coordinator and any follow-up documentation following an emergency event;
- findings of internal club audits, assessments and program reviews; and
- actions of the club board of directors regarding the Club's Safety Program.

Appendix A

Check List for Actions to annually maintain this Safety Program

Frequency or Timing	Action Required	Persons Responsible
Annually, immediately after election of new BoD	Appoint/confirm one director as Director for safety, responsible for the club's continuing Safety Program	President and BoD
Continuous	Safety to be on Agenda of all BoD and Club Meetings	Director for safety
Continuous	Safety to be on Agenda of all Instructor & Safety Committee meetings, club seminars, pilot meetings, workshops, etc.	CFI & Safety Officer (SO)
Annually before start of Flying Season	Review and Update Club SOPs	CFI, Director for safety, SO, CTP & Maintenance Director
Throughout the season	Audit activities of the club with respect to safety and include results in the annual safety report to the club AGM	Director for safety and/or SO
Annually	Review and update Lists of Hazards and Risks, the <i>Risk Assessment</i> , and Safety Goal lists & Prevention Strategies	CFI, Director for safety, SO & CTP with club members
Annually	Review Safety Performance measurements and compare against targets; set targets for current season	Director for safety with CFI ,SO and CTP
Annually	Complete Internal Safety Audit or review previous year's audit update; and obtain BoD approval for planned <i>corrective actions</i>	Director for safety, CFI, SO, plus audit team
Every 2 years	Send copy of completed audit to SAC National Office	Director for safety
Every 3 years, after an Accident, or after an unsatisfactory Safety Audit	Complete external Safety Audit (may be a review of the last internal Safety Audit after correction of problem areas) and send updated copy to SAC National Office	Director for safety, CFI, SO, plus External audit person and club audit team
Annually	Complete internal CFI Audit	CFI
As they occur	A Safety concern is raised and investigated, reported back if possible, and acted on as detailed in this manual	SO & CFI
As they occur	Incident reported, acknowledged to reporter, analysed, ameliorating strategy developed, documented; reported back to initiator and club, and actions taken to implement	SO, CFI and others as needed
As they occur	Accident happens; emergency procedure from club SOPs activated, actions documented; accident investigated and causes analysed (may request assistance from SAC, or SAC may ask to assist); reports generated and published according to this Manual; SO and CFI follow-up to issue final report and send copy to SAC National Office	Emergency Coordinator, President, CFI, SO, as available at the time; SO & CFI follow up
Annually at end of flying season	Write annual Safety Report (including analysis summary, and mitigation strategies and/or recommendations) and present to Annual General Meeting of the club	Director for safety and/or SO
Annually at end of flying season	Send copy of the club's Annual Safety report to the SAC National Office	Director for safety with the BoD
Annually before Club AGM	Select member names for the club's Instructor of the Year and Safety Awards; prepare certificates and the awards for presentation at the club annual meeting/dinner	CFI and SO with the BoD
Annually before SAC AGM	Submit nominations for SAC Instructor of the Year and Hank Jansen Safety Awards, and submit to SAC	CFI and SO with the BoD

Appendix B
Accident and Incident Reporting Form
(strike out non applicable)

The club Safety Officer or CFI should complete details within two weeks of the event. The pilot(s) should be given the opportunity in the first week to write his or her comments on the form. Forward the form with the CFI/Safety Officer's comments promptly by mail or e-mail to SAC. Use additional paper as required. This report also is to be completed for all events involving passengers:

Club: _____ Date of incident/accident: _____ Time of event: _____
Aircraft Type: _____ Registration: _____ Airframe Time: _____ hrs
P1 - Pilot Age: _____ Total Time: _____ In Last 30 days: _____ On Type: _____
P2 - Pilot Age: _____ Total Time: _____ In Last 30 days: _____ On Type: _____
Weather conditions: _____

Wind speed/direction: _____ Conditions/Visibility: _____ Runway in use: _____
Aircraft damage: _____ Estimated Cost of repairs: _____
Injuries: _____ Name of person who notified TSB: _____
Location of accident/incident: _____ No. of flights by P1 in location: _____

Description of the occurrence and events leading up to it (basic facts and observations):

Use additional sheets as needed.

Club Investigation and Analysis with statement of possible factors that may have influenced outcome (include pilot's view if possible):

Corrective Actions planned to reduce risk of recurrence:

Reviewed by CFI/Safety Officer (include relevant comments):

APPENDIX C

THE RISK ASSESSMENT PROCESS

The facilitator, usually the President or CFI along with the Safety Officer, should supervise this process. A group made up of the Safety Committee plus a cross-section of extra club members should be chosen; this should improve the overall outcome of this process.

They should hold a working session at which **hazards** are first listed then categorized. The **risk levels** are next agreed and put into the **risk assessment**. It is assumed that a computer and projector are used to compile lists and show results for this meeting. An alternative is to use a flip chart.

Step 1. Identify and List Hazards to Safety

The whole group is invited to participate, and should be told that no judgement is allowed on any person's ideas until later. This encourages a free-flow of ideas. Some unexpected hazards and those that have been forgotten might appear again on the list. If no hazards are suggested in some category during the session, the facilitator should suggest a category, in order to get as complete a list as possible of all hazards. The facilitator or other person should record the ideas as fast as possible. Some discussion with the stakeholders (tow pilot, maintenance facility, airport operator, etc) should be done before the meeting to gather any hazard information from their perspective.

Step 2. Categorization of Ideas

The group should next organise the list into categories or subject areas, such as launch point operations, airfield infrastructure, maintenance operations, and so on. Looking at the list will suggest other required broad categories.

Step 3. Risk Assessment (Estimating and Evaluating)

The group meeting should be broken into smaller groups that are asked to assign a *severity* to each hazard in the categories assigned to them.

There are two components to risk that the group should consider: the *severity* or consequences of an event if it occurs, and its *probability* or likely *frequency*. The hazards are to be assessed using the following levels of severity:

- A. Catastrophic (Loss of equipment or assets, fatal injuries)
- B. Critical (Major damage to equipment or assets, major injury)
- C. Marginal (Minor injury, minor damage)
- D. Negligible (No injury, no damage).

Also the likely *frequency* of occurrence for each hazard should be assessed:

- a. Frequent
- b. Probable
- c. Occasional
- d. Remote
- e. Improbable

RISK ASSESSMENT				
Frequency of occurrence	HAZARD CATEGORIES			
	A. Catastrophic	B. Critical	C. Marginal	D. Negligible
a. Frequent	1	2	3	4
b. Probable	2	3	4	5
c. Occasional	3	4	5	6
d. Remote	4	5	6	7
e. Improbable	5	6	7	8

It is easier to use this matrix to assign a number to each hazard. These numbers are somewhat arbitrary but the overall intent is to identify the major or highest risks. Here 1 signifies a bad risk

assessment and 8 a good risk assessment. We might want to act immediately on risks that show a 1, 2 and 3. 4 is undesirable, and will likely require a club management decision whether to accept the hazard or act to reduce it, i.e. will this risk be acceptable? 5 or 6 may require management review. Risks 7 and 8 are probably acceptable.

Step 4. Compiling Overall List

Following small group agreement on their lists, a plenary session should be held, in order to compile an agreed overall list of the hazards, with the highest risks listed at the top.

Step 5. Prevention / Mitigation Strategies

The group's agreement is required for all the unacceptable risks starting with the most severe risk. Risk control also may warrant immediate attention from the BoD before all the analysis is done, then a longer-term solution developed to handle that risk. Other risks may require urgent action. These and other levels of action should be agreed. Having identified the critical risks, the next task is to develop a strategy for eliminating or reducing each risk to an acceptable level. At the same time the lowest risks should be dropped off the list, for example, those with hazard categories of 8, 7 and/or 6.

The Strategy for handling the identified risks should next be completed and submitted to the BoD, with suggested time-frames to fix them. This part of the work may require consultation with the stakeholders which includes those who should be responsible for doing the work to fix the problem. It is important to get their acceptance of the risk level for that hazard, and of the need to eliminate or reduce it.

The CFI shall undertake to monitor progress with mitigation actions taken, and report to the BoD on progress.

ANNEX C

to *Safety Training Package for Club Safety Personnel*

Checklist for Club Safety Program Implementation

- ❑ Read Safety Training Package for Club Safety Personnel to start the process
- ❑ Get a three ring binder/dividers to record information & brainstorm a safety policy and safety goals for the club with the safety committee. Get preliminary approval of these from the club's BoD
- ❑ Hazard Identification
 - Collect safety reports/accident reports and any incident reports over the last few years
 - Get a copy of the last safety audit (or complete one if none exists)
 - Send out a survey to all club members asking for hazards they may be aware of at the club. (use email or post as necessary) see hazard Form
 - Get the club blue book from the flight line
 - Interview stakeholders for any safety concerns (CFI, SO, CTP, Maintenance Director, AME, Field Manager, etc) This may include airport managers, local Nav Canada, etc depending on the clubs operations
 - If possible raise the issue of hazards at club meetings such as instructor/AGMs/BoD to get more inputs
 - This is a collection process and try not get dragged into finding solutions
- ❑ Tabulate the results and develop a master list of hazards (active and latent)
- ❑ Use the safety Committee or form a small group of interested parties, try to have one inexperienced (new) member to give a fresh look
 - commence analysis of the hazards and look for the root cause or hazard
 - use risk analysis matrix to prioritize risks (use risk analysis form)
 - tabulate risks in order of priority and draw a line for acceptable risk
 - develop risk mitigation strategies (look at near term and longer term solutions)
 - record work in binder
- ❑ Consult stake holders with draft solutions for their input on practicality and refinement
- ❑ Draft Final Recommendations (document in Binder)
- ❑ Brief club BoD on results for steering/approval of process
- ❑ Take the sample Club Safety Program manual and cut/paste as necessary to reflect BoD direction and the results of your analysis to produce your document #4 Club Safety Program Manual
- ❑ Identify performance measurement methods to identify if goals will be achieved
- ❑ Identify action items for safety program manual
- ❑ Take a copy of sample club SOPs and cut/paste to meet needs of your analysis and produce your clubs Operating Procedures
- ❑ Forward final drafts to stake holders for approval
- ❑ Brief club members on results
- ❑ Forward a copy of your Club Safety Program Manual to SAC/FTSC

- Refine process each year to examine information available such as accident/incident/observations to identify new hazards & risk reduction. Keep records of all information in binder/electronic storage.

Admin

- SOPs and rules, (in particular Airfield and Flying Ops, Safety, Maintenance, Emergency Procedures)
- Club's unwritten procedures/rules
- Club practices: Safety and flight training, resource management, communication, correction of problems

Supervision

- Flight line ops.
- Pilots' Currency reqts.
- Planned activities: bronze & x-c tasks/courses
- Safety Bulletins, Correction of Problems

Safety Program

8. Safety program – daily briefings, safety training, recognition program;
9. Lessons learned from incidents – timely feedback to members;

Airport/Airfield Infrastructure

1. Fuel storage, Hangars, Tie-downs and tie-down areas
2. Public access and signage

Airport/Airfield

- Airfield layout – runways and directions re prevailing winds; runway slopes, lengthwise and to the sides, - – overshoot and undershoot areas – clear of bushes/trees
- Approach hazards – roads, power lines, non-frangible boundary fences
- Field maintenance, ditches/culverts, drainage, grass cutting

Pilots

- Initial, recurrent training/checks and advanced/cross-country training
- Condition (mental/physiological states)
- Unsafe Acts: decision-making, rules/regs breaking (routine and/or exceptional violations)
- Errors. Types of made: skill, decision-making, perceptual, forgetting, poor knowledge

Pilot Experience

- Efforts/strategies to maintain currency levels
- Encouragement to increase personal limits

Weather Conditions

- Flight planning and preparation for the anticipated conditions
- Increase personal limits

Some typical Hazards, mainly Supervision of the Flight Line Operations are:

- high workload for flight-line personnel during multiple towplane operations;
- poor communication between pilots, ground crew and towpilots/winch operators;
- pilots rushing through pre-launch checks;
- feeling fatigued and being pressured into “taking one more flight”;
- vehicles left close to runways and aircraft, or in unauthorized areas;
- launching incorrectly ballasted glider (e.g. overweight or very light passenger);
- failing to maintain good control of flight operations by *duty pilot* or other club leaders
- poorly designed or unused flight cards by instructors;
- inadequate checklists (e.g. for rigging, or for cross-country flights);
- lack of emergency equipment, procedures and training;
- poor communication regarding maintenance requirements (flying with minor snags) ;
- difficulty obtaining parts;
- confusing signs (access control for members of public to active runway areas);

Try to think of other hazards and hazardous situations that you have experienced

ANNEX E

to Safety Training Package for Club Safety Personnel

Risk Assessment Form

Date of Assessment: _____ Assessment #: _____ Assessor(s): _____

Use this chart to assign a hazard category number (1 to 8) against the hazards identified in the previous list. Then prioritize the list to produce a list going from the most severe to the least severe. Those at the top of the list will require immediate action to reduce or eliminate that hazard and hence the risk.

RISK ASSESSMENT				
Frequency of occurrence	HAZARD CATEGORIES			
	A. Catastrophic	B. Critical	C. Marginal	D. Negligible
a. Frequent	1	2	3	4
b. Probable	2	3	4	5
c. Occasional	3	4	5	6
d. Remote	4	5	6	7
e. Improbable	5	6	7	8

#	Description of Hazard	Hazard Category

ANNEX F

to Safety Training Package for Club Safety Personnel

SOARING ASSOCIATION OF CANADA

Standard Operating Procedures for Clubs

Recommended Practice Series



SOARING ASSOCIATION OF CANADA

***COLLECTION OF VARIOUS
CLUB OPERATING
PROCEDURES***

Prepared 2006 Mar 10

Revised 2008 March 25

**SOARING ASSOCIATION OF CANADA
L'ASSOCIATION CANADIENNE du VOL à VOILE**

**A NON-PROFIT ORGANISATION FOUNDED IN 1945
TO FOSTER MOTORLESS FLIGHT IN CANADA**

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Revision History

Revision No.	Date	Details of Revision
1	2008 Mar 25	Title change to reflect nature of these operating procedures as a collection of options available to clubs.

Preamble

This Recommended Practice is provided to enable a club to generate a Standard Operating Procedures Manual or Aide Memiore for the club if it does not now have one, or to amend its current manual to add some items that are included here. This is not a requirement on clubs but is provided to offer a sample SOP manual that will assist clubs to operate in a safe and responsible manner for the club members and the public at large. These operating procedure are not the only way or necessarily the best way to conduct operations but they have been found to be useful to minimize risk.

FTSC

2006 March 10

COLLECTION OF CLUB STANDARD OPERATING PROCEDURES

Recommended Practice (Draft as at 2006 Mar 10)

1. Introduction

This Recommended Practice is provided to enable a club to set up a Standard Operating Procedures or SOP Manual if it does not now have one, or to amend its current SOPs to add some items that are included here. This is not a requirement on clubs but is provided to offer advice for the safe operation of a club's flying. It is hoped this generic set of rules will assist clubs to operate in a safe and responsible manner for the members and the public at large.

It is assumed that the club will already have some directives or procedures respecting club management (that define how the club operates as a legal entity, financial procedures, etc). The club may also have guidelines or rules for instructing and pilot currency and checkouts, its maintenance program, plus towpilot and/or winch operator manuals or procedures that include items that are not *airfield operations* per se. A Safety Program Manual may include some procedures. This document however concentrates on best practices for airfield and related operations as derived from a number of existing club SOPs. We wish to thank these clubs for the use of their procedures, manuals or rules book in order to produce what is hoped will be of useful assistance to all clubs.

The following sections provide suggested wording that may be amended as required to suit the particular club's site and *modus operandi*.

The SOP Manual should include an amendment section at the front and a statement defining who in the club is responsible for its annual review. It is also recommended that a statement precede the operations sections of the manual to state that the sport of soaring carries a certain level of risk, including the possibility of serious injury or death, and that members who participate in the club activities are voluntarily assuming this risk.

2. Daily Flying Operations

For the daily operation of the club to be successful and enjoyable for all members, this set of rules and procedures should be followed. The successful operation of the club requires help from all members, both at the start and end of the day to set it up and to close it down.

The requirements on gliding clubs are defined by Law in the Canadian Aviation Regulations (CARs), by SAC Standards and Recommended Practices, by the club constitution and bye-laws, and its SOPs, by decisions voted on at club general and special meetings, and the club's insurance policy and *duty of care*.

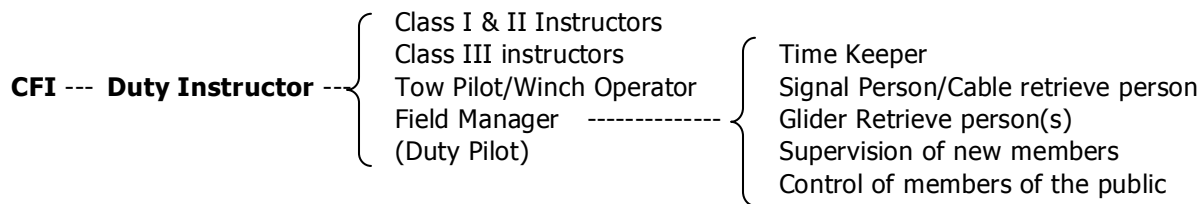
2.1 Responsibilities

The CFI shall be responsible for operational control for all flying (CAR 426.22). He or she may appoint assistants, and authorize others to perform certain functions, but the CFI retains the responsibility for all flying at the club. In clubs that do not perform ab-initio training a club shall appoint a *senior pilot* who shall assume the above responsibilities (*Association Standard for Clubs*, section 1.1). The decisions of the CFI or Senior Pilot are final.

Whenever training is taking place a minimum of a SAC class II instructor shall be present. He or she shall assume the duty of *duty instructor*. A Class III instructor may instruct

under the supervision of a more senior instructor. The duty instructor shall be in charge and shall assign duties for field manager (supervises the launch point), tow pilot(s) or winch operator, duty pilot, and time keeping, supervision of new members, control of members of the public, etc.

A typical chart of responsibilities for managing the flying operation is shown below:



2.2 Before Flying

2.2.1 Duty Instructor

The duty instructor shall ensure that the following tasks are assigned and carried out satisfactorily before flying each day: his or her leadership is vital for the safe operation that is to follow:

- Obtain weather forecast and determine that the weather is suitable for flying;
- Checking NOTAMS and other notices as applicable;
- Activating Memorandum of Understanding (MOU) and/or notifying local NAV CAN facilities of intended flying operations as required;
- Inspecting the airfield for condition and identifying and marking any problem areas
- Unpacking the hangar and performing Daily Inspections (DIs) on all gliders and towplanes/winches and other equipment by students and pilots who have been approved by the club, and the DI books filled in and signed;
- The DIs shall include a check that the C of A, C of R and Insurance Certificate is on board each aircraft, that the journey logbook is up to date, and that time remains before the next scheduled inspection;
- Setting up the launch point. This may include a special flight-line vehicle that contains tow ropes, parachutes, cushions, time keeping and flight priority systems, etc;
- Checking that an adequate supply of drinking water is available at the launch point;
- Briefing of all flight-line or launch-point persons before flying starts to include discussion of weather (limits to consider for students, others, etc.), towing and circuit protocols, and glider retrieving and winch cable procedures;
- Ensuring that all gliders moved to a flight line have been DI'd before they are moved, to prevent inadvertent use; (it is noted however that it is each pilot's responsibility to ensure that the aircraft is airworthy and has been given a DI);
- There may be an all-pilots briefing before the start of flying each day, in which case the duty instructor or other assigned person shall give this briefing after consulting with the field manager and agreeing on the objectives, safety points and flying possibilities for the day, etc.

2.3 During Flying

2.3.1 Duty Instructor

The duty instructor shall assign instructors and students for preparatory ground instruction and flying training/instruction, to ensure a smooth and steady operation. He or she also shall supervise the Class III instructors (the CFI may opt to do this when present), and shall supervise all student pilots who wish to fly solo. This duty may be shared with other Class I or Class II instructors who are present. These instructors shall authorize solo & dual flights by signing the club's flight sheet before each flight (the student pilot shall also sign).

The duty instructor shall ensure that the MOU or other protocol with NAV CAN is properly followed. He or she shall coordinate soaring activities, cross-country tasks and badge attempts, retrieve-crew arrangements, etc., and watch for anticipated weather changes during the day. He or she shall keep a watch on the general flying of members and shall provide briefings and debriefings when requested or when deemed appropriate.

When handing over to another instructor, an adequate briefing shall be done to include status of instructors, pilots, student pilots, and ground crew, towpilots and winch operators, who are currently on duty or flying. Also he or she should discuss the outlook for the weather and any other points that could affect the new duty instructor's decisions.

Remember it is the duty instructor's leadership that ensures a safe and smooth flow of training flights for the student, and check flights, etc., for the members at the launch point.

2.3.2 Field Manager

During the day the field manager's (duty pilot's) duties shall include:

- Ensuring the operation is running smoothly and safely to maximize members' soaring opportunities; this to include ensuring proper time-keeping, use of tow ropes, cables and parachutes, and that gliders, when not in use, are adequately secured or tied down;
- Scheduling pilots according to the club roster system;
- Operating the flight line so that pilots and gliders make maximum safe use of launch capabilities of towplanes and/or winch;
- Ensuring that pilots and gliders are ready for flight before being moved into place on the flight line or takeoff grid;
- Ensuring gliders are moved off the runway/retrieved after landing;
- Assisting with training new members for retrieving and parking or positioning gliders, assisting pilots to get ready, launching gliders, signaling takeoffs, etc., and
- Other tasks may be delegated to an Assistant Field Manager at busy times; these include:
 - Time keeping for each flight, and log book entries;
 - Listening to and responding to the ground radio; note that no control instructions may be issued, only advisories and information may be given;
 - Maintaining a list of pilots wishing to fly solo, dual and with guests and visitors, who should be suitably greeted and briefed about safety and the procedures used at the flight line/launch point;
 - Passenger weighing and signing of membership application and waiver forms for introductory flights; etc;
- In the event of an accident, implementing the Emergency Response Plan;
- Handling all equipment so as to minimize risk of damage and/or injury.

Remember it is the field manager's leadership that ensures a safe and smooth operation at the launch point.

2.4 After Flying

2.4.1 Duty Instructor and Field Manager

At the end of the day or whenever flying is stopped for the day, the duty instructor is responsible for ensuring that every glider is accounted for; see below. His or her main task now is to supervise the putting away all aircraft and equipment and secure it. Equipment such as parachutes and ropes must be properly stored, and batteries placed on charge, etc. The tasks for the day are finished when the club book-keeping and correct entering of data in log books are completed. The field manager assists with or carries out these as assigned tasks.

Hangar Stacking and Tie Downs. These tasks are very important and should be performed with one person in charge who is familiar with how they should be done. Hangar stacking is normally done only by club members; remember that mistakes can cause damage that might ground the aircraft needlessly and at considerable cost. This also goes for outside tie-downs that should be double-checked for assurance that the aircraft will not become loose or break free in high winds for periods of up to one month or more, depending on long-range weather forecasts, and the club's operational schedule and plans.

Aircraft/equipment maintenance problems should be identified, recorded, visibly indicated (USE DO NOT FLY tags as required) and reported to maintenance supervisors.

In the event of an incident record the information in the comment book or *blue book*, or file a more detailed report by filling out a report form.

Following the initial response to an accident, request that the pilot fill out a copy of the SAC accident report form (provide a blank to the pilot if no injuries) and notify the club Safety Officer.

If all gliders are not accounted for at the end of the flying day (especially those on cross-country flights) procedures should be set in motion to resolve the situation; such as checking the hangars or trailers for the call letters. If still not accounted for, check with members at the clubhouse to see if a call was received or a recovery crew was dispatched.

3. Airfield Procedures

3.1 Daily Inspections

A Daily Inspection is required for all aircraft before flight each day. Details of the inspection are specified in the DI book which must be filled in and signed off by a suitably trained and authorised club member; the book shall be kept in the glider. Similarly a DI should be given to the other equipment used at the club such as a winch, and heavy power equipment such as rollers and mowers. All defects or snags should be recorded and the equipment declared unserviceable (use DO NOT FLY tag) if the defect warrants this action.

All pilots are responsible to ensure that the aircraft they intend to fly is airworthy and has been given a DI.

3.2 Parachute Care and Use

These are not mandatory when flying gliders in Canada. Many clubs require their use however, and provide a set of 'chutes for their members' use in club gliders. Note that 'chutes are a requirement in contest flying and are highly recommended at all times for all glider pilots. Because they are vital pieces of emergency equipment they should be kept in good condition at all times, as follows:

- Check parachutes daily before use, and have them repacked according to the manufacturer's recommended schedule;
- Keep 'chutes clean and dry at all times; keep warm in winter during extended storage, and never place on the damp ground;
- Keep fuel and oils away from all 'chutes at all times;
- Declare the parachute unserviceable and repack if it is allowed to become wet or damp, or if the retaining pins become bent or withdrawn from their retainer position, or if the rigger's red seal-chord is broken.

3.3 Personnel Movements

Be aware of all aircraft movements whenever approaching and crossing a runway, whether it is in active use or not. Remember that gliders are silent. Small children must be closely supervised, and dogs tied up or on a leash. Supervise all movements of visitors at all airfield operational areas.

3.4 Cars

Cars and other vehicles must be parked well clear of runways, the launch point or flight line; there is no excuse for a glider bumping into a car! But it has happened.

If cars or other vehicles are used for retrieving gliders after landing, the driver must always be aware of aircraft approaching to land when crossing a runway, and should always leave the windows open to facilitate communication with the persons holding the wing and walking with the glider.

3.5 Visitors

Visitors are a possible safety problem because they do not know the club procedures and may not have read the posted notices. Show them where they are safe to watch, and advise them to stay clear and to the side of operational areas and to be extra vigilant for approaching aircraft when walking near a runway. Visitors should not be allowed to handle aircraft unless briefed and closely supervised on how to do so safely and correctly. Under no conditions should a visitor be allowed to launch a glider by signaling or running a wing. Accompany them if necessary to increase their safety, and ask them not to touch the gliders. Visitors can easily distract pilots especially during pre-launch checks. Keep them away from pilots at these times.

3.6 Handling Gliders on the Ground

Unlike powered aircraft gliders have to be manually moved on the ground some of the time, assisted by towing vehicles of one sort or another at other times. It is important that all members know how to handle the gliders and move them with the least effort and as safely as

possible. New members should be taught at the first opportunity how to do this and how to communicate effectively to minimize risks of damage.

3.6.1 Moving Gliders

- Gliders moved to a flight line shall all have been given a DI before they are moved, to prevent inadvertent use;
- Before any person may operate a tow vehicle (including a private automobile) to move a glider at the club he or she must be thoroughly briefed on the process and be made aware of the safety requirements for e.g. towrope length, need for communication with other persons holding the wing, speed of tow, etc.
- Only one person is required at one wing tip at one time when moving the glider unless it has special towing equipment for use behind a car, for example;
- When handing over from one wing tip holder to another, the first person says “YOUR WING” and the second acknowledges with “MY WING”, and then takes hold of the wing tip; this very clear communication should be used anywhere a hand-over is made;
- When moving gliders around, only use the words **STOP** and **GO**. These two commands are clear and unambiguous; the word *whoa* sounds like *go*, and *OK* can mean either *yes* or *no* or anything else! All members should be encouraged to use only these words when handling aircraft;
- Move a glider a short distance using people only, and usually move the glider backwards, and raise the tail to prevent damage if fitted with a skid;
- Handle gliders *carefully*, use a tail dolly or lifting handles if provided, and never push on control surfaces and do not lift by the tailplane or elevator;
- Push on the fuselage and leading edge of the wing, avoid pushing on any trailing edge;
- A person must hold one wing tip of the into-wind wing to steer the glider and to prevent the wing from being picked up by the wind;
- In strong winds it may be necessary to place a person in the cockpit to add ballast and to hold the controls firmly against being damaged by banging against the stops;
- Towing gliders a greater distance than is easily handled by people only, is commonly used by clubs using a variety of vehicles;
- In all cases the rope must be at least one wing span in length to avoid the glider hitting the vehicle if a swing occurs;
- If a cg hook is fitted to the glider, use this so that in the event of a bad swing the *back release* will let go the rope avoiding possible damage. The glider is also more easily steered by the wing tip holder;
- When moving the glider by vehicle usually two people should accompany it, one at the wing tip and the other at the nose of the glider to prevent running into the tow vehicle; in strong gusty conditions, more people will usually be required to handle the glider safely;
- Always hold the control stick steady by using the straps or other means to avoid the control surfaces banging against the stops, particularly when moving the glider across the wind or downwind;
- When about to enter or cross a runway, a careful 360° scan for aircraft approaching from any direction must be done, remembering that gliders are silent.

3.6.2 Canopies

- Keep canopies closed and locked at all times; they are expensive to replace (\$10K) and often are broken by being mishandled;
- Be aware of the sun being magnified by the curve of a canopy - this can cause smoldering or a fire on upholstery; use the canopy cover to keep the inside of the cockpit cool;
- As far as possible never reach in through the window in a canopy to open the dive brakes or pull the release handle; the danger of breaking the canopy is too great;
- If the window jams and cannot be easily opened/closed, first do not force it, but get assistance from an experienced pilot; these windows can easily break, and they cost;
- Never lift the canopy by the Perspex! Use the main canopy frame to lift it and don't force it open or closed without assistance from a qualified person;
- When cleaning a canopy use soft cloths and recommended Perspex cleaner only; avoid touching with bare hands at all times (a common problem with visitors).

3.6.3 Securing or Parking Gliders

Parking gliders is an important job to get right! When left unattended they can swing into wind if given a chance. It is essential to position them when not immediately required for a flight, so that they cannot damage an adjacent glider. If a glider is allowed to swing into wind this allows the wing to develop lift, and some gliders can be and have been blown over, even when tied down! Depending on the strength of the wind and the gusts, all or some of the following precautions must be taken:

- Park gliders usually with one wing down, with the wind blowing slightly from behind; this applies to mixed wooden and metal gliders such as the Ka-7, L-13, etc;
- Remove tail dollies;
- Use a tie-down or place a tire or suitable weight on the wing tip (so as not to touch the ground in case the wing swings and the weight is dragged off, allowing the wing to rise!);
- If necessary also use a tie-down or place a weight on the downwind side of the tail to prevent the tail from dragging sideways;
- ~~• When the wind or gusts are very strong a vehicle may be placed under the high wing to help keep the into-wind wing on the ground;~~
- Use a tail or rudder lock, or tire to prevent the rudder from banging against the stops;
- Close and lock the dive brakes; this helps prevent entry of debris and water;
- Close and lock the canopy and cover it with the canopy cover;
- If the glider is a heavier glass type aircraft it is acceptable to place the downwind wing on the ground to avoid damaging the top surface of the wing, particularly with tail-heavy, and with modern highly-finished gliders;
- Gliders that are balanced on the main wheel when empty, e.g. Puchacz, are susceptible to weather-cocking and should be parked conventionally, not with the into-wind wing up;
- Assign someone to stay with the glider if in doubt about the wind/weather;
- If winds are very strong and move gliders easily, the gliders should be tied-down or hangared. Sufficient personnel should be on the field to put the gliders away quickly if the weather turns bad.

3.7 Launching Gliders

The flight line or launch point is the most hazardous area on the ground during operations, and it must be a place where everyone is disciplined to perform safely and to follow the club's procedures. If in doubt don't become involved until you have been thoroughly briefed on safety precautions and the way to do the various tasks correctly. The following safety points need to be followed at all times:

- Keep away from gliders being launched unless you are directly involved, and ask bystanders to move well to the side;
- Do not distract a pilot by talking unnecessarily while he or she is preparing for takeoff;
- When moving around the gliders/towplanes, e.g. when handling ropes or cables, be keenly aware of the aircraft and the possibility of a takeoff starting at any moment;
- Always walk behind a glider when the rope or cable has been attached;
- Always walk behind a towplane when its engine is running; approach the cockpit from behind the wing and only if the tow pilot has seen you;
- Always approach a towplane or other power aircraft from behind the wing even when the engine is not running ~~outside the prop diameter, that is as if the prop is rotating; this gets you in the habit of moving safely~~ (one day you might unconsciously avoid a rotating prop);
- Always keep to the downwind end of the launch area behind the gliders, so as to avoid moving cables or ropes in front of the gliders that are ready to be launched;
- Avoid picking up a second cable if the winch has two or more drums; it may start moving unannounced, even if not connected to a glider (moving cables can cut limbs off);
- Assist the field manager or duty pilot by always following their instructions; Keep out of the line of sight of the winch launch controller; and
- Try to avoid unnecessarily distracting those running the operation from doing their assigned tasks for the club members.

3.7.1 The Aerotow Launch

There are emergency signals and procedures that must be learned before a new person can safely help with the launch. Hence, to ensure you are taught it all, ask to have the ground signals and procedures demonstrated, and any special club rules explained. Then practice them under supervision the first times that you run the wing for example.

As a minimum the following tasks have to be assigned:

- Person in charge of launching gliders (field manager/duty pilot or launch controller);
- Wing runner;
- Time keeper;
- Repeat signaller (some clubs do not use a person ahead and to the side of the towplane which is recommended);
- Tow pilot.

The first four tasks may be performed by the same person, for example when there is a limited amount of flying activity, e.g. mid-week.

3.7.1.1 Aerotow Launch Procedures

- Gliders should be arranged in a line or lines to form a grid, depending on the available runway width and numbers of gliders;
- The glider next in line for takeoff is moved into the front position if not already there, and with the pilot ready, having completed the pre-takeoff checks;
- At the same time the wing runner is to search for traffic *above and behind* which would make an immediate takeoff hazardous; he or she should also check that the dive brakes (spoilers) are closed and locked, that the tail dolly (used by many gliders) has been removed, and that the pilot has checked canopy locked; these checks are normally shouted to the pilot;
- The wing runner normally should hold the the upwind wing particularly in any appreciable cross-wind; if the glider has poor directional control (tends to weathercock into wind) the downwind wing may be more safely held; the pilot will indicate the preferred wing to be held;
- The towplane will land behind the glider, or will land and proceed down the runway and taxi back (on the runway or on one side) before moving into line ahead of the glider to be launched; the tow rope may have been dropped or retained by the towplane;
- Either the wing runner or an assistant collects the tow rope and checks it for fraying and knots (if they cannot be removed, a new rope should be substituted);
- When requested by the pilot, the wing runner/assistant attaches the rope to the glider's nose hook; this is done using both verbal and hand signals to *open* the hook and *close* it when the ring has been inserted into the hook mechanism; he or she should confirm that it is *on and secure*;
- The rope having been attached, the wing runner should pull on the rope to ensure it is securely attached to the hook;
- The wing runner again checks for possible conflicting traffic approaching to land or ahead on the runway, and waits for the glider pilot to give the *take up slack* signal;
- The pilot gives the signal and the wing runner raises the wing to signal that the takeoff is imminent; at the same time the *take up slack* signal is relayed by the repeat signaller and the towplane is moved forward slowly;
- When the slack is removed from the rope, the *All Out* signal is given to the tow pilot by the wing runner and repeat signaller;
- The wing runner runs with the wing as far as possible, keeping it level or the into-wind wing slightly low in the case of a cross wind;
- If either signaller sees a possible conflict with the pending takeoff, they are to stop the takeoff by giving the *STOP* signal; likewise any other person at the launch point is to signal and shout *STOP* for any problem they see; the pilot is to immediately pull the release.

At some clubs the repeat signaller for the tow pilot is not used. Note also that when initiating the takeoff, some pilots will call, "take up slack" when they give the thumbs-up signal, and will again call, "all out" when the rope is tight. Make sure you know the system in use at the club you visit.

3.7.2 The Winch Launch

There are emergency signals and procedures that must be learned before a new person can safely help with any winch launch. Hence, to ensure you are taught it all, ask to have the ground signals and cable assembly and hook-up procedures demonstrated, and any special club rules explained. Then practice them under supervision the first times that you perform these tasks.

As a minimum the following tasks have to be assigned:

- Person in charge of launching gliders (field manager/duty pilot or *launch controller*);
- Wing runner;
- Assistant – gets cable and attaches to the glider (the wing runner may do this task);
- Time keeper;
- Cable retrieve driver (winch operator may do this task);
- Winch Operator.

Some of these tasks may be combined as shown; which ones will depend on the signalling method used and local conditions at the club. There are several methods used for signalling to the winch operator – see also section 4.9. A typical set of procedures is presented here; note that specific procedures required for each winch/club combination and signalling method will produce variations on this list.

3.7.2.1 Winch Launch Procedures

- Gliders should be arranged in a line or lines to form a grid, depending on the available runway width, numbers of gliders and winch capabilities (no. of cables);
- A list of the weak links and glider combinations should be available at the flight line, showing the correct weak link and colour coding. Note that the pilot must know the correct weak link, and that it is the one on the cable to be used for the launch;
- The glider next in line for takeoff is moved into the front position if not already there and ahead of any vehicles or structure used at the launch area, with the pilot(s) ready, and having completed the pre-takeoff checks;
- The cable(s) is removed from the retrieve vehicle and placed on the ground ready for the launch. A second cable if present must be placed well to the side and clear of other gliders and people. Normally the downwind cable should be used first;
- The wing runner checks that the correct weak link is fitted to the cable assembly, or replaces it with the appropriate weak link for the glider to be launched;
- The wing runner (or assistant) takes the cable to the glider and waits for instructions to attach the cable; note that the pilot must be the only person to instruct the wing runner to attach the cable; the cable must always be connected to the cg or belly hook;
- At the same time the wing runner is to search for traffic *above and behind* which would make an immediate takeoff hazardous; he or she should also check that the dive brakes (spoilers) are closed and locked, that the tail dolly (used by many gliders) has been removed, and that the pilot has checked canopy locked; these checks are normally shouted to the pilot;
- The glider pilot asks for the cable to be attached; by doing so he or she is indicating readiness to be launched immediately;

It is important that the cable's parachute assembly should never be attached to a glider before the cable itself has been attached to the parachute assembly; there is a serious risk of an inadvertent launch if the pilot does not control the final connection to the winch.

- Then wing runner asks the pilot to “open” the release hook; when the ring is in the hook, the wing runner says “close” and the pilot repeats this to confirm;
- The wing runner checks the ring is correctly inserted by pulling hard on the cable, and calls “cable on and secure”; this ensures that the assembly that includes the weak link assembly is also securely attached;
- The wing runner then checks to ensure there are no conflicts at height above the runway, on approach and on the runway itself, and waits for the pilot to ask “All clear above and behind?” If all clear, the wing runner replies “All clear above and behind”;
- Upon receiving the *take up slack signal* from the pilot the wing runner raises the wing to signal that the takeoff is imminent; at the same time the *take up slack* signal is relayed by the launch controller to the winch operator who starts to take up the slack;
- Do not raise the wing if the circuit or takeoff run is not clear; the same applies if the glider pilot appears to have any problems - for example, air brakes accidentally left open;
- When the slack is removed from the cable, the *All Out* signal is given by the wing runner and the launch controller will relay this to the winch operator;
- The wing runner runs with the wing as far as possible, keeping it level or the into-wind wing slightly low in the case of a cross wind;
- If the wing runner, launch controller or any member of the club sees a possible conflict with the pending takeoff, they are to stop the takeoff by shouting *STOP* and giving the *STOP* signal; the pilot is to immediately pull the release.

4. Operational Safety

4.1 General

Safe flying means being aware of all information that has been sent or given to all members by the CFI, posted at the club, in the club’s newsletter, by e-mail and on the club website (members not having access to this should be mailed the relevant information) and of all safety information contained in publications such as *FreeFlight*, the Aviation Safety Newsletter, NOTAMS, aeronautical information circulars, etc. It is a pilot’s own responsibility to be informed and the CFI’s responsibility to ensure effective dissemination and updating of this information.

4.2 Daily Briefings

All pilots should obtain a daily weather forecast and if necessary be present at the club’s daily briefing before flying commences. The daily briefing allows pilots to become aware of essential details of the day’s activities, including discussion of possible weather-related and other safety or operational concerns. Responsibilities as outlined in sections 3.7.1 and 3.7.2 can be assigned if not done earlier, and all pilots made aware of these.

If a pilot misses the briefing he or she should be able to obtain the necessary information. The briefing should include but not be limited to:

- Equipment in use (any DO NOT FLY aircraft?), feedback from daily inspections, any problems?
- Weather forecast including hazards that may be present e.g. turbulence, or that may develop later, lift predictions;
- NOTAMS that can affect the club’s operations, or a pilot flying cross-country away from the club;

- Operating restrictions such as ground towing routes, avoiding long grass or wet areas of the airfield, preferred takeoff areas on runway, suitable/unsuitable emergency off-field landing areas close to the club, etc;
- Operations for the start of the day, e.g. runway in use, special towing direction or areas to fly around and avoid (noise reduction);
- Circuit and approach paths/procedures;
- Any pilot restrictions such as low-time pilots being restricted because of high winds;
- Mass landing procedures; and
- Any other safety items.

4.3 Special Flights

When requested, as far as possible *check flights* for member pilots should be given priority. See also section below.

Brief all ground task personnel on need to look out for *visitors*, to brief them on essential safety points and to hand them over to the designated pilot who is hosting them.

Members may only perform *aerobatics* when under instruction with, or by prior authorization from a club instructor possessing an aerobatic endorsement on his/her licence. No visitor may be taken on an aerobatic flight. A parachute shall be worn during aerobatic flight. Stalls, spins and spirals are not considered aerobatic manoeuvres.

4.4 Checkouts on Type

The club should include here the requirements established for the pilot experience needed to transition to each glider in the club fleet, e.g. for:

Low performance single seat gliders (no flaps, no retractable gear),

More complex gliders (flaps & retractable gear), and

High performance types (typically fibreglass/composite).

Glider types with very effective air brakes (L-33, LS-4, Jantar, etc.) require pilots to demonstrate three consecutive dual minimum energy landings in a glider with effective air brakes (Puchacz, L-13, etc). Note, over-rotations on flare and too slow on final must not be observed by the check pilot. A good approach and landing has a safe final approach speed, which is allowed to decay on rotation and hold-off to close to the stall speed as the main wheel touches the ground. At no time is the glider to be over-rotated to check the descent, allowing the tail wheel to strike the ground first. The main and the tail wheel/skid should touch down at the same time allowing a minimum ground roll.

An Instructor familiar with the type will do type conversions and use a check list for the type. The pilot must first read the flight manual, and the instructor will review the walk-around, and explain the DI, rigging/derigging, and trailer loading, entering the cockpit, strapping in and layout of controls, attitudes for landing/takeoff, flying qualities/quirks, safety points and performance including polars, weight and balance requirements, parachute used in type and egress practice.

A first solo on type should be supervised by an instructor familiar with the type (ideally the same who did the ground briefing), and should include requirements for minimum manoeuvres at altitude to explore the handling qualities and flight envelope, i.e. slow flight, stalls, wing drop stall recovery, and rate of sink in various configurations (use of flaps, air brakes, landing gear), and height losses in final glide configuration. Spins, spirals, high speed handling qualities and penetration performance should be explored on a later flight or flights.

For checkouts on motorized gliders, see the SAC recommended procedures.

4.5 Rigging/Derigging

Since this is a critical operation that may be done infrequently with club gliders, training sessions will be given to groups of members on a regular basis, and when a pilot newly converts to the type. A typical operation will require the following cautions and steps:

- Appoint one person knowledgeable/experienced with the glider type to supervise and be the *Team Captain*. Too many chiefs can cause damage;
- Use tires or other types of suitable material to protect wings if they must be laid on a hard surface. On a grass or similar surfaces always slide the wing forward before resting its weight on the surface so that straw does not puncture the wing's undersurface;
- Follow the manufacturer's recommendations for loading and storing in a trailer. Home-made solutions can easily cause damage;
- Have proper cleaning materials, lubricants and other equipment such as wing stands, available before rigging;
- If one person rigs, another person not involved should repeat the post-assembly inspections. Positive control checks must be done after assembly. Pay particular attention to control hook-ups;
- Never force components together if it does not happen easily, you are doing something wrong.
- Canopies are often damaged during these operations, and cars have been known to run over a component on the ground. Extra care must be taken with how they are handled and where they are placed on the ground;
- Sailplanes are best stored in their trailers in a hanger if possible. Storing dis-assembled gliders outside their trailers is very risky.

4.6 Daily Task Setting

If the club has a cross-country program for its newer and advancing pilots, a task set at the start of the day provides a great incentive for extending a pilot's experience and enjoyment. A briefing should be provided to assist these pilots, to include retrieve crew arrangements, and a check at the end of the day to account for all gliders. Turn points to be attempted should be recorded on flight log comments section for each pilot, as this constitutes a flight itinerary in the event of a search being required later.

4.7 Discipline

As a general rule, if any person refuses to follow the club procedures that are necessary to ensure the effectiveness of the club's safety program, he or she shall be referred to the CFI. It is suggested a small committee under the chairmanship of the CFI be the authority to deal with each case. For minor infractions the CFI shall usually prescribe *corrective coaching*.

4.8 Memorandum of Understanding (MOU)

An MOU is an operational agreement with, for example, NAV Canada and the club concerning how and where the gliders may operate, etc. Specific agreements are in place in a number of clubs.

Before flying starts on any day, it may be necessary to inform (usually by phone) the local NAV Canada facility that the club is operating, to obtain clearances or to give other specific data as required by the MOU.

4.9 Signals

It is essential that an adequate method of signalling exists between the launch controller or wing runner and the tow pilot or winch operator. Warning lights/beacons are an added safety feature and area required in certain cases.

4.9.1 Alternative signalling methods are:

- hand signals,
- phone (field phone using buried lines),
- light signals,
- radio,
- Day-Glo painted paddles, or flags.

Normally hand signals are used for towpilot signalling, but radio may be used between the glider pilot and towpilot or winch operator. This can be less safe because of tow plane cockpit noise, winch engine noise, or radio failure, especially under an emergency when the STOP signal may be required. An alternative signalling system must be available therefore, for both aerotowing and winch operations. Radio use for launching signals can interfere with normal use of the frequency by glider pilots. For winch operations a phone line provides a good method for passing other messages between the two ends of the line, and is therefore a preferred method.

4.9.2 When driving on the club's airfield turn on headlights and emergency flashers.

4.9.3 Warning lights, flashing strobes or beacons are required for certain clubs that operate at airports. A winch should include a flashing beacon that is turned on automatically when the drum is engaged. At the same time (when the *take up slack* signal is given) a similar flashing beacon should be activated at the launch point to indicate to all that a winch launch is about to take place.

4.10 Mid-Week Flying

Normally scheduled duty personnel are not present and hence mid-week flying is not supervised outside of public holidays or during special camps.

Members who wish to fly mid-week are responsible for ensuring all critical functions are carried out and that a safe operation is undertaken. The members shall as far as possible follow the written procedures, but may put alternative controls in place to ensure the safety of all personnel and of the flying operation, plus completion of all administrative functions such as time-keeping and log-book entries.

4.11 Severe Weather Plan

In the event of a severe weather forecast or observation, the duty field manager or Flight Instructor will report observations and recall all aircraft to the field. All personnel should make themselves available to secure aircraft/hangars etc. Aircraft should land closest to the hangar or emergency tie down area. Aircraft not in hangars should be chained or tied down with control locks on. In the event of lightning all personnel should seek suitable cover in buildings or automobiles away from metal surfaces/objects. Prudent early action should be the decisive factor.

5. Emergency Response Plan and Procedures

The club must have an emergency procedure posted in a prominent position at the flight line and near each telephone at the club, and known to all members. It must contain as a minimum, immediate actions for the senior person at the site, plus the phone numbers of emergency services and the Transportation Safety Board local contact number. The following is a suggested minimum list so that regulatory, national, regional and local club requirements are met:

In Case of an Accident at or close to the airfield: Stay calm and don't delay – time can be crucial

5.1 Immediate Actions:

- Agree on who is to be the *Emergency Coordinator* (senior club member who is present) who shall immediately take charge;
- Assess the Situation:
 - Is there a fire?
 - Extent of injuries?
 - How many injured?
 - Need to extract a person?
 - What type of help is needed?
 - What is exact location of accident?
 - Registration letters of aircraft involved.
- Call **911** (or other local emergency numbers) to call AMBULANCE, FIRE and/or SEARCH AND RESCUE Services;
- Delegate other duties as below;
- Tend to any injured persons but do not try to remove a person from an aircraft without expert assistance, unless the person is in more danger, e.g. from fire; do not move the aircraft until approved to do so by the TSB, unless its presence is a danger to other traffic in which case it may be moved.

NOTE: All club members are expected to comply with the directions given by the *Emergency Coordinator*.

5.2 Follow-up Actions:

5.2.1 Notification of Authorities:

- Call the club's CFI, President and Safety Officer (SO); (and include their names and phone numbers here);
- Notify the TSB at (phone number of local contact); have available before calling: data from 5.1 above plus pilot's name and licence number, and be prepared to leave message; main number will be on their answering machine if a weekend.

5.2.2 Other Tasks:

- Appoint a person to be *Spokesperson* for media and other briefings if the *Emergency Coordinator* is unavailable to do so – see note below; make certain all other members understand they are not to comment to the media or public on the accident;

- Send two people to the road nearest the accident site to guide emergency vehicles to the scene as required; other guides may be needed at other intersections or the club entrance itself;
- Assign one or two people to keep all people away, except emergency and other officials,
- *Emergency Coordinator* to take photos and record data such as time of accident, weather and other related information; if necessary, assign someone else to do;
- *Emergency Coordinator* is next to obtain witness names and addresses if non-members, and ask for statements from each;
- When the TSB releases the aircraft, move to a safe place to be out of site, and cover as far as possible;
- Be prepared to stop launching, and to advise pilots who are flying of the emergency on the airfield. This may not require all aircraft to land, but the pilots should be made aware of any possible hazards when they return;
- Complete a brief report immediately for the CFI, SO and Board of Directors who shall notify the *insurance company* and *SAC*;
- Follow-up with the required SAC accident report form (previously given to the pilot(s) concerned if uninjured) and hand to the CFI and SO for sign off and forwarding to the SAC National Office.

NOTE: Be prepared to deal with media but do not divulge names of any victims unless the authorities have confirmed next of kin have been notified. The spokesperson (President, CFI or Safety Officer) identified in your plan is to provide media only with factual information about the club if asked. Particulars about the accident should be general in nature, leaving questions about the cause to be answered by stating that the accident is under investigation and further information will be available once the officials have completed their findings.

ANNEX G

to *Safety Training Package for Club Safety Personnel*

Example Safety Culture Audit

Identification: Student_____ flying member_____ instructor_____

Number of years a club member_____

Please circle your responses:

1. How would you assess your club safety climate (i.e. group collective attitude towards safety and actions to promote safety)?

- A. Not adequate.
- B. Marginally adequate.
- C. Adequate.
- D. More than adequate.

Recommendation/comments:

2. How would you assess the SAC safety program?

- A. Not adequate.
- B. Marginally adequate.
- C. Adequate.
- D. More than adequate.

Recommendation/comments:

3. Are you aware the club has a safety program?

- A. Not aware
- B. Aware but have not read it.
- C. Aware and have read it.

4. Are you aware that the club has completed the SAC Safety Audit?

- A. Not aware
- B. Aware but have not read it.
- C. Aware and have read it.

5. If you are a new student, did, or is your training in "flying safety" meeting your expectations?

- A. Not adequate.
- B. Marginally adequate.
- C. Adequate.
- D. More than adequate.

Recommendation/comments:

6. Do you feel that there are safety issues in the club that have not been addressed?

- A. No issues
- B. Yes, the following should be addressed:

7. Do you feel that you can communicate your views or raise issues freely within the club?

- A. Yes
- B. No. The problem has been:

ANNEX H

to Safety Training Package for Club Safety Personnel

NOTES ON INCIDENT ANALYSIS FOR USE IN CLUB SAFETY REPORTING

Terry Southwood, CFI Cu Nim Gliding Club

It's widely known from detailed investigations in industrial safety, that almost every accident tends to be preceded by a number of related incidents. So incident reporting and analysis offers a tool with the potential to reduce or even eliminate accidents. How can gliding clubs use this tool to improve safety?

To begin with, the club must establish an environment that is conducive to the voluntary reporting of incidents. Incidents are easy to overlook, ignore or even hide. Denial plays a big role in human nature. We don't like to be wrong. We don't like to admit our mistakes. And we don't like to feel those mistakes might put us at risk - even in an aviation sport! As a result we are not inclined to report anything that might be labeled as a mistake.

This same denial is often mirrored on the receiving end of the report, where we are inclined to distance ourselves from the stigma of an incident, wanting no part of a "dumb mistake that we would never make". Chew out the messenger, and presto - end of incident reporting! Sound familiar?

The first thing we have to do is change this. Why? To get the information! Before we can go any further, the club must appreciate that the information contained in an incident report is valuable - sometimes incredibly valuable. This information not only has the potential to save your club money, it has the potential to save somebody's life. To get that information, it is crucial that, within the small confines of a club, incident reports be handled quietly, one-on-one in a positive manner that is respectful, objective, appreciative and above all, confidential.

At Cu Nim, incidents are reported verbally, first of all to make it easy, and second to eliminate the negative connotation that goes with having to submit a written report. This is in contrast to my handling of accidents, in which written reports abound, confidentiality goes out the window, and hard conclusions are often drawn.

The whole point of reporting and evaluating incidents is to prevent or reduce accidents. It is not to assign blame, point fingers or flay someone for having made a mistake. We all make mistakes. The important thing is to learn from those mistakes wherever possible.

Recognition

With a positive climate established, the next thing we have to do is educate our members as to what an incident is. I suspect that most people in most clubs do not recognize an incident unless it is a real jaw-dropper.

Over the last five years at Cu Nim, we have recorded an average of about 20 observed or reported incidents per year - about 15 incidents to every accident. If this ratio is typical, then the national accident rate indicates that SAC should be receiving at least 300-400 incident reports every year!

For starters, let's make it clear that an incident is not the same as an accident, even though some people use the term interchangeably. An accident results in property damage and/or personal injury or death.

The definition of an incident is much more subjective, and tends to reside in the eye of the beholder. We will come back to this, but I think we need to start from the point of view of this very useful definition: An incident is a cheap lesson. It's cheap because you didn't bend anything, but it only becomes a lesson if you learn from it.

Analysis

On a personal level, the important things to learn from an incident are: what happened, why, and how would you prevent a recurrence. On a club level we can get into a much broader analysis of cause and prevention which can be applied to both incidents and accidents.

This analysis doesn't demand that you be a rocket scientist. But you must be prepared to look at everything with "fresh eyes". Questioning the broader aspects certainly requires an open mind. And obviously you would be well served by that ultimate of oxymorons - common sense. Related reports, even as few as two or three, can be a strong indication of trouble, and should be examined for a common thread that might point out the same basic problem in each case. However, reports need to be examined from different points of view, in order to find a perspective that gives us useful information. Let's consider three perspectives, the phase or type of flight and system factors.

1 Phase of flight - The "phase of flight" perspective (eg. takeoff, circuit, and landing) is common in aircraft accident evaluation, but other than confirming that our greatest risk of hitting something hard is when we are close to the ground, I'm not sure it tells us much. At Cu Nim, we have largely evolved away from this point of view.

2 Type of flight - We have used a "type of flight" perspective to compare our incident and accident record between introductory flights, student training flights, solo student flying, licensed pilot flights and flights by new members. Analyzing multiple events required the "common thread" approach.

A couple of years ago, Cu Nim was bitten by a series of seemingly unrelated accidents, each occurring under a wide variety of circumstances. On closer examination, we found two common threads. In each case the pilot was unaware of some mechanical quirk of the glider. Further, each was a licensed pilot who was new to the club. But it wasn't scapegoats we were after. We had failed to properly integrate these new pilots into the club operation, with its thousand and one details. Had they not been licensed, these people would have been smoothly integrated into our student training program. But, like other clubs, we had no program to integrate new members who were already licensed. We do now.

3 System factors - Perhaps the most useful perspective we have found is a sort of system factors viewpoint. It is useful because it examines factors over which we have some control. These system factors are itemized below:

Human - From a club point of view, sorting out all the human factors isn't as important as identifying who is having what problem, and then helping them. But it is critical to realize that this is the factor that demands confidentiality. Incidents that are caused by factors other than the pilot are eligible for public discourse - this one is not. (although dealt with first here, this factor should be assessed last, as too often the pilot is blamed for all the incidents. However, a closer look at other factors may make the Human factor less of a "cause" factor.-Ed)

I remember a Cu Nim pilot years ago who had two or three incidents of scraping back to the field on marginal, straight-in glides. Each one alarmed him, but the repetition continued until the predictable accident occurred, and then he stopped flying with us. Today, I think incident tracking helps us to better recognize the warning signs so that we can hopefully assist such a pilot and prevent not only the accident, but the loss of membership that so commonly follows.

The environment - This includes not only wind and weather, but things like airspace and density altitude. Potential problems may be impossible to correct, but they can at least be identified, and pilots can be educated to make allowance for these variables.

During the first days of the '96 Nationals in Red Deer, a number of competition pilots experienced potentially nasty wing drops while taking off with water ballast on a runway bounded by lights. At subsequent pilot meetings, there was a clamor for more power out of the towplanes. I suspect a lot of people never did realize that in flying at 3000 feet above sea

level, they had left the benefits of their usual thick air at home. Those of us from Cu Nim meanwhile, had come down in elevation and were enjoying a small increase in performance!

Aircraft - Every type of glider has its strong and weak points of design, handling and behavior. Individual gliders will have their own quirks. Simply making your members aware of these imperfections can be a strong deterrent to accidents.

Although I think that Blaniks are an excellent glider for training, they too have their foibles. The weak over-centre lock on the spoilers makes them susceptible to the spoilers coming open on takeoff. The flap and spoiler handles are not only close together, but are the same size and shape, making it easy to mix them up. And this year, we had a few instances of spinning off a spiral dive due to a high speed stall. Not good things, but good things to know.

Airfield - Runways, ground facilities and surrounding terrain are difficult to change, but spreading the knowledge that they can contribute to incidents and accidents helps everyone to compensate for these factors.

After buying our land at Black Diamond, we created a new cross runway 14/32 and immediately began to experience low approach incidents onto 14 which, having trees and a boundary fence to cross, was a real concern. Conversely, 32 has a reasonable undershoot area, yet I have never seen a low approach to this runway. We think the cause is the low ground under the base leg to 14, as opposed to the high ground on the base leg to 32. Each has the capacity to visibly influence the pilot's circuit judgement. We can't change the surrounding terrain, but at least we can identify this potential problem to pilots, without having had to buy the information through a costly accident.

Operation - Club rules, routines, and procedures are a major factor over which we have complete control. But we must be willing to look for their culpability in both accidents and incidents.

A few years ago, one of the nastiest possible incidents - towplane upset - caused us to re-evaluate details of our operation. Strong emphasis was given to proper release procedure to ensure that the trigger for the turn off tow was not the act of pulling the release - but the visual confirmation, and verbalization, that the "rope is gone". And we dropped the routine of boxing the wake during spring check flights in favour of a simpler "T" maneuver that was safer for rusty pilots.

Flight training - As we have been granted self-regulation over student and instructor training as well as licence flight testing, this is a factor that we not only can control, it is one we must control.

As part of our response to three spoiler-open takeoffs in '93, we began to teach the rudder wag and other emergency signals on tow. We found that, unlike rocking the wings, a rudder wag varies greatly between towpilots. The two can look surprisingly similar, and using radios for immediate feedback is invaluable. We also modified the "cannot release" signal from the glider, moving to the left rather than the right before rocking the wings. The left side was not only more visible to the towpilot, but could not be confused with the normal departure turn to the right.

A perspective such as this can not only help you analyze both the cause and the prevention of incidents, but it can illuminate many things that you never noticed as being incidents. You don't even have to call them incidents. They are cheap lessons, and all you have to do is see them.

Let's analyze a typical incident from a system factors perspective and see how it works. For our example, let's drag out that old nemesis - the low, flat approach - which is so often paired with its ugly accomplice, the low turn onto final. From my experience, the low approach on final is so ingrained at some clubs, it is an incident that is almost invisible. (If a size-able portion of your final approach uses little or no spoiler, I'm talking to you!) Sure, sure, I know, if this is so bad how come nobody but What's-his-name has ever had a problem with it. Watch your operation for a while. Critically. With fresh eyes. What's-his-name isn't the only one having a problem. He is just the only one who had an accident. An incident analysis might raise questions in all of the below system factors:

a) Human: Some pilots are going to be more susceptible to misjudging a low approach, but is the real problem obscured by the fact that most of the time, most of your pilots have the skill or the good fortune to get away with it?

b) The environment: Can you spell wind gradient? The low approach might present no problem on most days, if most of your days have light winds. Are windy days a common thread?

c) Aircraft: Few gliders tend to be under-spoilered any more, so are the spoilers being under-used?

d) Airfield : Surrounding terrain can influence pilot judgement, obstructions should influence pilot judgement. Are approach incidents only happening on a certain runway?

e) The operation: At what height do you normally start the circuit? If that height was moved one or two hundred feet higher, would the problem go away? If people get razzed for anything other than a short field landing, does this force them to lean towards an undershoot? Is the razzing your real problem?

f) Flight training: Does your club place a heavy emphasis on half-spoiler approaches? Do your students really understand what you mean by this? Or have you inadvertently turned the SOAR process around by specifying a course of Action to the students which may not apply to the Situation - if the situation is an undershoot. Should your flight training be changed to de-emphasize the half-spoiler option and instead focus on better use of the aiming point?

Obviously the analyst is key to the success of the process at this stage, and the question of who should fill this important role is perhaps answered in the next step.

Implementing solutions

Once the problem has been identified through analysis, one or more possible solutions can then be implemented. This is easier said than done.

First of all, people tend to resist change. (How did such an insecure species ever get as far as we have?) Your attempts will have to be gradual. If you push too hard, people tend to push back. Old habits die hard, so don't expect overnight results.

Secondly, by bringing incidents into focus, people are going to have the impression - at least initially - that things are getting worse! After all, we never had all these incidents before, did we? Unfortunately, this is the price of leaving the land where ignorance is bliss.

Thirdly, now that all these incidents are happening, some people are going to want all the gory details, especially who was involved. If you are going to maintain the confidentiality that gets you the reports in the first place you are going to have to resist this. The argument you will be up against is that old adage about learning from other people's mistakes. Let's talk about that, because I think it consists more of fond hope than reality.

People, including glider pilots, run the full spectrum. At one end we have a small percentage who really do learn from the mistakes of others. These people tend not to have accidents themselves. Hopefully they already fill key roles in your club. At any rate, I think these are the people who should be in charge of your incident/accident analysis. At the other end, we have another small percentage who don't even learn from their own mistakes, much less anyone else's! And in the middle we have the majority of people, who I am convinced do not learn anything from any situation until they have personally experienced it themselves. Up until then, it is simply someone else's story or someone else's problem.

Here's the good news. The club environment offers us a way out of this dilemma. If the people who do learn from others are in a position to affect improvements, then it benefits everyone in the club. Reinforce the improvements with some positive peer pressure, and the club ends up being a very potent vehicle for the safety of all its individual pilots.

This is why I think that the primary benefits of incident tracking occur at the club level. However, factors such as aircraft problems or training have implications that reach beyond any one club to a national or even international level. But here too, the same pre-requisites for report handling and analysis apply. Otherwise the flow of reports is again put in jeopardy, and without those reports, no one benefits at any level.

Results

As the handling of incident reports improves, you should see an increase in the number of incidents. It won't mean they are actually increasing - people will simply be reporting more of them. It will mean that you have cleared the first hurdle.

If the analysis of the reports is good, and reasonable solutions are implemented, you should eventually see a reduction in the accident rate. Monitoring this will mean having to keep some continuity in club accident records.

In five years of incident analysis at Cu Nim, we have had seven injury-free accidents - two write-offs, two with substantial damage, two with moderate damage and one that was very minor, for an annual rate of 1.4 accidents per year. In the ten years prior to this period, we recounted from memory over twenty accidents. Given that the actual number was most certainly higher, I would guess that in the last five years, we have cut our accident rate in half. Please do not conclude either that we are satisfied with the current accident rate, or that the reduction is due entirely to our process of incident tracking and analysis. I wish I could say that the lessons we learned were cheap ones. But we paid dearly for some of the information I pass along today.

However, I am encouraged that the accident rate is dropping, and that two of the last five years, including 1997, were accident free. And I am confident that, thanks to some good analysis, we have a clear picture of both the cause and the cure of the accidents we did have. Accidents will not cease. There is too much luck involved, too many variables, too many factors we cannot control. But I firmly believe that this process of incident tracking and analysis is a tool that can reduce our accident rate. All we need to do is use it.

EXAMPLE

Club: _____ Incident Summary Year _____

Serial (date)	Event	Incident Analysis Factors							Action
		Environment	Aircraft	Airfield	Operation	Flight Training	Misc	Human	

Refer to Terry Southwood's article (below) on Incident Analysis published in Free Flight 1/98 for details on how to assess factors listed

ANNEX I

to Safety Training Package for Club Safety Personnel

SAFETY TRAINING AND ORIENTATION PROGRAM

Suggested topics:

* Annual recurrent training recommended

1. SAC Safety Program and documentation
2. Club Safety Program
3. Safety Reporting System
4. Risk Identification Process
5. Safety Culture
6. Operational Safety
 - a) Flight line operation
 - b) Aircraft handling
 - c) Safety book
 - d) Maintenance safety
 - e) Parachute care and use
 - f) Glider trailer use
 - g) Winch operation and risks*
 - h) Safety/emergency equipment
 - i) Daily Inspections
 - j) Positive control checks
 - k) Emergency response plan
 - l) Tow recovery vehicles
 - m) Safety Audits
 - n) Tow plane operations
 - o) Refueling operations
7. Flight Safety
 - a) SOAR technique
 - b) Collision avoidance*
 - i. Limitations of the eye
 - ii. Limitations of perception
 - iii. Scan techniques
 - iv. Blind spots
 - v. High risk areas
 - c) Stall/spin avoidance*
 - i. Flight configuration risk/symptoms
 - ii. Incipient/wing drop recovery
 - iii. Full spin/spiral recovery
 - d) Use of checklists
 - e) Options in CISTRIC-O
 - f) CRM
 - g) Human Factors*
 - h) Preflight inspections
8. Club General Safety
 - a) Facility maintenance equipment and vehicles
 - b) Pools and recreational facilities
 - c) Fire and first aid ambulance
 - d) Hazardous chemicals