# Report from the joint IGC/OSTIV safety initiative to the IGC Plenary 1st and 2nd March 2024

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A joint Safety Seminar with participation of competition pilots, organisers, stewards, and safety expert from IGC, OSTIV and EASA took place in Copenhagen on the 5th of March 2023.

The aim of the workshop was to create an updated picture of risks (frequency and severity) at gliding competitions.

Participants:

- Erik Borgman, Pilot
- Frouwke Kuipers, Chief Steward
- Henrik Svensson, OSTIV
- Karol Staryszak, Pilot
- Mandy Temple, Steward
- Peter Eriksen, IGC/facilitator
- Richard Carlson, OSTIV
- Robert Danewid, Chief Steward
- Rolf Radespiel, OSTIV
- Russell Cheetham, Pilot
- Wolgang Janowitsch, Pilot
- Vladimir Foltin, EASA

The full report from the workshop, the Mitigation Plan and status on the actions are annexed to this report.

The outcome was very clear.

The most severe risk is Mid-air collision. Most of our effort shall focus on the mitigation of this risk. A number of ways to mitigate the mid-air collision risk was identified, from the organizational aspects, the way a competition is managed with the right focus on risk, the geometry of task, the pilot workload and head-down time when monitoring instruments etc. OSTIV will try to create a better understanding of the conditions where the collision risk is highest by analysing IGC files from previous competitions.

We shall however not forget the other risks identified, such as e.g. “Controlled Flight into Terrain” and Pilot fitness.

The risk picture created at the Workshop is in line with work conducted by EASA.

This initiative be long term. We have started with the “low hanging fruit”, where we expect safety benefits from changes that are relatively easy and simple to implement. Some actions will take several years to materialize.

The new training of Championship Sporting Directors is one of the spin-offs from the activity. Competition Safety will be part of this training.

Peter Eriksen

# Joint OSTIV/IGC Safety activities

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# Content

# Background

We currently spend effort on improving safety in gliding competitions, but we do not correctly understand the risks, it is based on an outdated risk picture.
Consequently, our approach to safety seems scattered and un-focused and we are unable to communicate a clear ambition on competition safety.
We wish to:

- Develop good understand on the safety risks that need to addressed;
- spend our effort in a prioritized way;
- mitigated risks by appropriate means with defined goals and ambitions;
- Base our approach to safety a combination of data and perception;
- be in a better position to communicate a safety strategy and objective;

to increase the impact and give us access to more effective risk mitigation.
This document serves as a description of these joint safety activities. The document is living and will be updated at regular intervals to describe current status and future plans.

## Copenhagen Safety Workshop

This joint OSTIV/IGC activity was initiated at a Safety Workshop held in Copenhagen in March 2023 with participants from OSTIV and IGC. All participants have a background in gliding, as pilots, as competition organizer, or as safety expert. This **"Informal Safety Group"** will take part in the further development of the work, all contributing with their skills and background. Size and membership of the Informal Safety Group is dynamic and will change over time.
The objective of the Copenhagen Workshop was to:

- Identify hazards linked to Competition Glider Flying
- Quantify risks in terms of severity and frequency
- Prioritize risks
- Identify possible mitigations for the most significant risks
- Initiate short- and long-term mitigation actions in terms of safety projects, procedural changes, studies, etc.
- Formulate and initiate reporting and regular follow-up activities
- Facilitate Communication

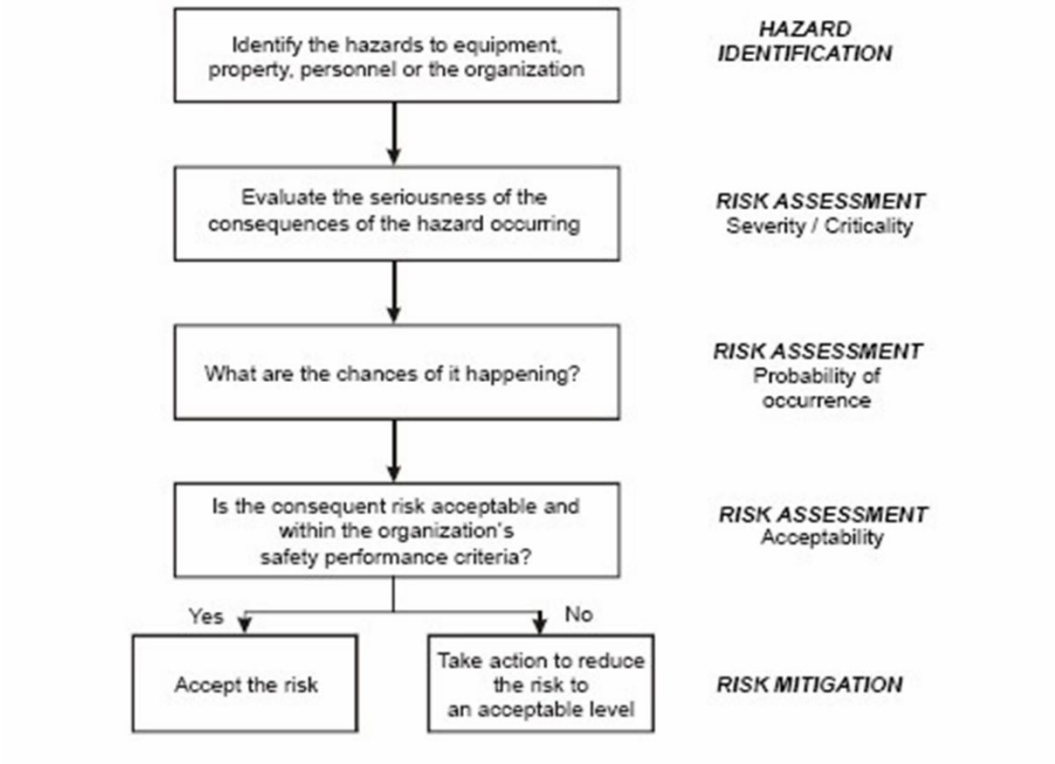
## OSTIV/IGC Risk Management objectives

In aviation, Risk Mitigation have different objectives:
**Reactive Risk Management** – Do something to address the risks identified in an accident or incident after it has occurred. This is how early aviation safety did risk management because they did not have any/enough data to do…….
**Proactive Risk Management** – Do something before an accident happens by utilizing data to identify risks from past accidents or incidents. Aviation safety has a well earned reputation for being a leader in proactive risk management.
**Predictive Risk Management** – Do something based on potential risk as determined from normal operational data (i.e. not accident data) to reduce the risk of an accident that has not happened (yet)
The objective of OSTIV and IGC is to reach the level of Predictive Risk Management, but this is a process that requires time and effort to achive.

## Establishment og Safety Risks in Competition Gliding

Identified hazards are assessed in terms of criticality of their harmful effect and ranked in order of their risk-bearing potential. Risks are assessed often by experienced personnel, or by utilising more formal techniques and through analytical expertise.
The severity of consequences and the likelihood (frequency) of occurrence of hazards are then determined.

If the risk is considered acceptable, operation continues without any intervention. If it is not acceptable, the risk mitigation process is engaged.



## Safety Hazards

- A hazard is anything with the potential to cause harm.
- A hazard is any condition, event, or circumstance which could induce an accident
- A hazard is any existing or potential condition that can lead to injury, illness, or death to people; damage to or loss of a system, equipment, or property; or damage to the environment.

When identifying hazards, the exposure (frequency of occurrence) and potential consequences of the hazard are not addressed.

### Safety Hazards in competition gliding

The workshop identified the following hazards related to competition gliding:

| Group | Hazards |
|---|---|
| **Pilot Workload** | Distraction |
| | Complacency |
| | Stress |
| | Head down |
| | Manipulation of instruments |
| | Engine test |
| | Technical problems |
| | Information overload |

| Group | Hazards |
|---|---|
| **Pilot fitness** | Unfit to fly |
| | Mental fatigue |
| | Physical fatigue |
| | Loss of control |
| | Lack of situational awareness |

| Group | Hazards |
|---|---|
| **Ground & Launching** | Gridding damage |
| | Crew injury |
| | Wing collisions |
| | Rush leading to damage |
| | Tug failure |
| | Too low speed |
| | Congestion of airfield |
| | High launch pace |
| | Crew hit by propeller |
| | Accident with crew car |
| | Crew situational awareness |
| | 3rd party injury |

| Group | Hazards |
|---|---|
| **Outlanding** | CFIT |
| | Low altitude manouvering |
| | Loss of control |

| Group | Hazards |
|---|---|
| **Glider/pilot interaction** | Unfit |
| | Mis-assembling |
| | Mass-balance error |
| | Loose equipment |
| | Bad equipment install. |
| | Cockpit lay-out |
| | Electric glider/low power |

| Group | Hazards |
|---|---|
| **Mid-air collission** | Turn inside in thermal |
| | Blind-spot flying |
| | Abrupt manouvres |
| | Head-down time |
| | Use of mobile phone |
| | Cloud flying |
| | Trafic density |
| | Head-on trafic |
| | Bird strike |
| | Too close to cloudbase |

| Group | Hazards |
|---|---|
| **Landing** | Runway incursion |
| | Runway blocked |
| | 3rd party injury |

| Group | Hazards |
|---|---|
| **Low altitude manouvering** | CFIT |
| | Loss of control |

| Group | Hazards |
|---|---|
| **Pilot proficiency** | Complacency |

## Risk Assessment

When quantifying the risk related to a hazard, the severity of consequences and the exposure (frequency) of occurrence of hazards are determined and classified.
If the risk is considered acceptable, operation continues without any intervention. If it is not acceptable, the risk mitigation process is engaged.
The following quantification of Risk consequences was used at the workshop

### Risk consequences

| Consequences | Classification |
|---|---|
| Severe injuries (hospitalization) or fatalities to pilot, team members, organizers or 3rd party.<br>Write-off of glider or other significant equipment. | Score: 6,7 |
| Light injuries (no need for hospitalization).<br>Repairable damage to glider or other equipment | Score: 3, 4, 5 |
| No injuries<br>Glider or other significant equipment repairable over-night | Score: 1, 2 |

The following quantification of Risk exposure was used at the workshop:

### Risk exposure

| Consequences | Classification |
|---|---|
| Very often, several times per year at IGC-sanctioned competitions, at most competition | Score: 5 |
| Frequent, in average early during IGC-sanctioned competitions | Score: 4 |
| Not every year during IGC sanctioned competitions | Score: 3 |
| Not frequent, but it will probably happen. | Score: 2 |
| Rare, may never happen, but the risk exists and should not be forgotten | Score: 1 |

By multiflying the frequency and Severity, the Criticality of a Safety Risk can then be calculated

# Criticality Matrix

Severity

| | | | | | |
|---|---|---|---|---|---|
| 7 | 7 | 14 | 21 | 28 | 35 |
| 6 | 6 | 12 | 18 | 24 | 30 |
| 5 | 5 | 10 | 15 | 20 | 25 |
| 4 | 4 | 8 | 12 | 16 | 20 |
| 3 | 3 | 6 | 9 | 12 | 15 |
| 2 | 2 | 4 | 6 | 8 | 10 |
| 1 | 1 | 2 | 3 | 4 | 5 |
| | 1 | 2 | 3 | 4 | 5 |

Frequency

| | |
|---|---|
| Red ≥ 20 | High criticality - Mitigation required |
| 11 ≤ Yellow ≤ 19 | Medium criticality - Mitigation optional |
| Green ≤ 10 | Low criticality No mitigation required |

The result of the Risk assessment gave the following classification of Risks:

| | | | | | |
|---|---|---|---|---|---|
| 7 | | | Low alt. Manouv.<br>Pilot/glider interact.<br>Pilot fitness | | Mid-air collission |
| 6 | | | | | |
| 5 | | Pilot proficiency<br>Launching | | | |
| 4 | | Outlanding | | | Pilot Workload |
| 3 | | | | | |
| 2 | | | | | |
| 1 | | | | | |
| | 1 | 2 | 3 | 4 | 5 |

## Mitigation of risks

Risk Mitigation - steps taken to control or prevent a hazard from causing harm and to reduce risk to tolerable or acceptable level.
When a risk has been found to be unacceptable, control measures need to be introduced.
The level of risk can be lowered by:

- Reducing the severity of potential consequences.
- Reducing the probability of occurrence harmful effects.
- Reducing the exposure to that risk.

Analysis of the risks resulted in the table below, where the risks that needs mitigation have been identified together with the objective to reduce the risk, either the severity or the exposure.

| Risk | | | | | | Objective | | |
|---|---|---|---|---|---|---|---|---|
| **No** | **Risk** | **Severity** | **Exposure** | **Criticality** | **Acceptable** | **Strategy** | **Short term (2028)** | **Long term (2033)** |
| 1 | Mid-Air collision | 7 | 5 | 35 | No | Reduce exposure (frequency) | Reduce to 50% of current | Reduce to 10% of current |
| 2 | Low alt. Man. | 7 | 3 | 21 | No | Reduce exposure (frequency) | Reduce to 50% of current | Reduce to 50% of current |
| 3 | Pilot fitness | 7 | 3 | 21 | No | T.b.d. | T.b.d. | T.b.d. |
| 4 | Glider/pilot interaction | 7 | 3 | 21 | No | T.b.d. | T.b.d. | T.b.d. |
| 5 | Pilot workload | 5 | 4 | 20 | No | T.b.d. | T.b.d. | T.b.d. |
| 9 | Landing | 3 | 4 | 12 | Y | No mitigation required | No mitigation required | No mitigation required |
| 6 | Pilot proficiency | 5 | 2 | 10 | N | T.b.d. | T.b.d. | T.b.d. |
| 7 | Ground & launching | 5 | 2 | 10 | Y | No mitigation required | No mitigation required | No mitigation required |
| 8 | Outlanding | 4 | 2 | 8 | Y | No mitigation required | No mitigation required | No mitigation required |

### Data analysis

Data exist and will continue to be to collected, to analyse the number of collisions.
It is the aim to develop a methodology to analyse the potential collisions, as the number of collision is insufficient to provide reliable data on the trend.
A task will be undertaken to analyse proxies based on FLARM data, this will help detecting changes in proxies on a yearly basis, but will also help identifying where hazard are in terms of phase of flight, condition (e.g. thermaling or straight flight), etc.
Once the analysis task has been defined, it will be described in more detail.
This will help determining if the objectives have been achieved.

### Safety barriers

When determining mitigation actions, it's necessary to go back to the hazards to identify change that can reduce the exposure or severity of the particular hazard, also called **Defenses** or Safety Barriers.
The Defenses within competition gliding can be:
**Physical defences,** including specially designed hardware and software that discourage or prevent inappropriate action, or mitigate the consequences of events (e.g. safety cockpits, parachutes, Strobe lights, FLARM, etc.)
**Administrative defences,** including regulations, procedures and practices that mitigate the probability of occurrence of an accident/incident (e.g., Sporting Code, Local procedures, Task setting, Start- and Finish-procedures, supervision and inspection, training, competency schemes etc.

**Behavioral defenses**, Training and awareness addressing Human Limitations, Risk Readiness etc.

### Mid-air collision risk

The risk for Mid-air collision stands out as the most significant risk at competition gliding, and requires immediate action.
During the last years, a number of mitigation initiatives have been taken, but the speed of development and implementation of these safety barriers should be increased.
See **Annex A** to this document for the Mitigation Plan.

### Other Risks

Looking at the other risks identified, some of these need additional safety barriers, and must be looked at also. The Mitigation Plans for these risks have not yet been completed. An online workshop will be planned during spring 2023.

## Future activities and communication

### Initiation of identified work.

The aim is to complete the Risk Assessment and Risk Mitigation Plan during spring 2023. Following the completion of risk, assign the activities to the relevant groups and bodies within OSTIV and IGC or elsewhere, and establish groups, where no relevant body exists. The aim is to have all activities assigned and to assure that work has started/is ongoing before ultimo September 2023.

### Communication

Communication is a very important part of the activity, in order to get the message out, but also to assure by-in from competition organisers and competition pilots.
The following means of communication are considered:

- Moderated forums for pilots to address one or more issue. Members of the group could be moderators for the safety items they wish to prioritise.
- Workshops/webinars online of Face-to-face on dedicated topics
- Workshops/meetings when pilots are gathered, e.g., at competitions at international or national level. All IGC sanctioned competitions should have a workshop/seminar.
- Articles in magazines
- Sessions at IGC Plenary meetings. There will be sessions at all future IGC Plenary meetings, based on the current status, using this document as reference.
- OSTIV…….

# OSTIV/IGC Safety Risk Mitigation Plans
# (updated Q1 2024)

## Mitigation Plan - Mid-air collision

| Identified hazards | No | Defense type | Raised recommendation, improvement and/or issue | Reference | Comment | Reference to Evidence | Expected Delivery | Responsible | Satisfied | Status |
|---|---|---|---|---|---|---|---|---|---|---|
| Cloud flying<br>Hazardous bahavior<br>Pulling-up | 1. | Physical | Manadate strobelights on gliders | IGC Bureau | Strobelights helps seeing gliders on opposite or crossing tracks. Stobelights should operate continously, but frequency may depend on proximity of other aircraft e.g. driven by FLARM | S.C. Annex A | Year-1 proposal agreed on 2022. Should become mandatory from 1 Apr. 2024 | IGC Bureau | Yes | Closed |
| Blind-spot flying<br>Turn inside in thermal<br>Flying close to cloudbase | 2. | Physical | Require FLARM on Tow planes | Workshop March 23 | The tow-zones and drop-zones are often very congested. Whereas glides must hav FLARM, some towplanes do not.FLARM in tow planes will improve the ability to spot the tow plane | S.C. Annex A/Bid document | 2025 competitions | Championship Management WG (CMWG) | No | Under consideration by CMWG. Positive view to act |
| Head down (mobile phone, flight computer manipulation)<br>Task geometry | 3. | Physical | FLARM ranage analysis | Workshop March 23 | Good FLARM installation/range increases the posibility to detect a conflicting glider in due time. Obligation to provide FLARM ranage analysis at scrutineering will bring more focus on bad FLARM/antenna installation and prompe the pilot to implrove. | S.C Annex A | 2024 competitions | CMWG | No | CMWG recommend Proposal to IGC Plenary by IGC Bureau |
| | 4. | Administrative/ Procedural | Pilot Event Marker | IGC Bureau | The use of PEV can lead to redused gaggling. | S.C. Annex A/Local procedures | Implemented | CMWG | Yes | Closed |
| | 5. | Administrative/ Procedural | Number of participants | Workshop March 23 | Reduction of no of gliders per class will reduce the collision risk. Reduction to 50% will normally reduce risk to 25%. | S.C Annex A | Decision to implement not taken | IGC Bureau | No | No progress |
| | 6. | Administrative/ Procedural | Task setting | Workshop March 23 | The geometri of a task can increase/reduce the risk of head-on collision by avoiding turnpoint angles above 45 degrees. Rules/recommandations shall be considered | S.C Annex A | 2025 competitions | CMWG | No | To be considered by CMWG. Possibly Annex A Committee action |
| | 7. | Administrative/ Procedural | Task type | Workshop March 23 | The type of task(s) used may in its nature lead to gaggles. New types of tasks may reduce the risk of gaggles and mid-air collisions | S.C. Annex A | 2027 | Task force (WJ, RD & PE to initiate the task | No | Workshop to be held in Q1 24 |
| | 7. | Administrative/ Procedural | Data analysis | Workshop March 23 | Collection, storage and analysis of proximity data will help understanding collision risk, can support legislation and recommandation and help identifying additional ways to reduce collisions | Publication of analysisi reports | Continuous, starting ultimo 2023 | OSTIV | No | Action started - long term activity |
| | 8. | Administrative/ Procedural | Scoring system | Workshop March 23 | The scoring system can help preventing large gaggles. One new system already exists in Annex A, but it is not used. Implementation to be discussed and recommended to organisers | Annex A | 2024 competitions | CMWG | No | CMWG to pomote. Reluctance by organisers to use the new scoring. |
| | 9. | Administrative/ Procedural | Altitude difference at start/finish | Workshop March 23 | The use of a start procedure that will allow for altitude difference combined with PEV will reduce gaggling and can lead to less flying close to cloudbase before start. A system (the start ring) was adopted at the 2023 Plenary as Year-1 | Annex A/Local procedures | 2024 competitions | KS, Poland/ Annex A Comm. | No | Y2 Proposal from Poland at 2024 Plenary |
| | 10. | Administrative/ Procedural | Safety Management System | Workshop March 23 | Improvement of the existing Safety Management Systems will improve pilot awareness and help identifying hazards and possible mitigations. The Electronic Safety Box is one example (adopted by Plenary 2023 as Year-1). The "Green/Yello/Red glass system another posibility. Recommandations to be further developed. | Annex A/Local procedures | 2023 competitions and onwards | Safety WG | No | No progress |
| | 11. | Administrative/ Procedural | Definition of accaptable manouvres | Workshop March 23 | Definition of acceptable or not-acceptable manouvres with penalties. Decision to implement not taken | Annex A/Local procedures | T.b.d. | IGC Safety Working Group | No | No progress |
| | 12. | Behavioral | Quality of Championship management | Workshop March 23 | Mandatory training of Championship Management and Stewards with focus on risks and related mitigation | Bid document | 2024 competitions and onwards | CMWG | No | To be included in Steward and CD training. |
| | 13. | Behavioral | Risk Readyness | Workshop March 23 | Reduction of Pilot's readyness to take risks by peer-pressure/shaming | T.b.d. | T.b.d. | T.b.d. | No | No progress |
| | 14. | Behavioral | Pilot safety index | Workshop March 23 | Collected data could be used to create a Pilot Safety Index. Decision not taken | T.b.d. | T.b.d. | T.b.d. | No | No progress |
| | 15. | Behavioral | Awareness campaign | Workshop March 23 | Awareness campagn will help communication the message and could also be used to explain changes to rules and procedures | Bid document/Local Procedures | 2023 competitions and onwards | Safety WG | No | No progress |

| Mitigation Plan - Low altitude manouvering accidents | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Identified hazards | No | Defense type | Raised recommendation, improvement and/or issue | Reference | Comment | Reference to Evidence | Expected Delivery | Responsible | Satisfied | status |
| Controlled flight into terrain<br><br>Loss of control | 1. | Physical | Angle of attack indicator | Workshop March 23 | AoA indicator may reduce risk of stall due to high angle of attack/low speed at low altitude. Already recommended in Annex A. Awareness campaign may be needed. | S.C. Annex A | Implemented/to be reinforced | Safety WG | No | No progress |
| | 2. | Physical | Safety cussions | Workshop March 23 | Safety cussions can reduce injuries. Already recommended in Annex A. Awareness campaign may be needed. | S.C. Annex A | Implemented/to be reinforced | Safety WG | No | No progress |
| | 3. | Physical | Personal location indicator | Workshop March 23 | Already recommended in Annex A. May become mandatory | S.C. Annex A | Implemented possibly to become mandatory | Safety WG | No | No progress |
| | 4. | Physical | Safety items list | Workshop March 23 | Review of list, posibly make more proposals mandatory | S.C. Annex A | Implemented possibly to become mandatory | Safety WG | No | No progress |
| | 5. | Administrative/ Procedural | Task setting | Workshop March 23 | Task setting to avoid areas where outlandin is difficult. Carefully consider experience of pilots when setting tasks. Training of Competition management. | Bid document | 2024 competitions and onwards | CMWG | Yes | To be included in Steward and CD training |
| | 6. | Administrative/ Procedural | Minimum height | Workshop March 23 | Investigate if procedures for minimum height can be implemented with support of IGC file analysis | S.C. Annex A/Local procedures | Decision to implement not taken | CMWG | No | No progress |
| | 7. | Administrative/ Procedural | Finish height | Workshop March 23 | Finish height sufficiently above ground to allow for landing circuit at reasonable height | S.C Annex A | Implemented | CMWG | Yes | Closed |
| | 8. | Behavioral | Quality of Championship management | Workshop March 23 | Mandatory training of Championship Management and Stewards with focus on risks and related mitigation | Bid document | 2024 competitions and onwards | CMWG | No | Will start now |
| | 9. | Behavioral | Risk Readyness | Workshop March 23 | Reduction of Pilot's readyness to take risks by peer-pressure/shaming | T.b.d. | T.b.d. | T.b.d. | No | No progress |
| | 10. | Behavioral | Pilot safety index | Workshop March 23 | Collected data could be used to create a Pilot Safety Index. Decision not taken | T.b.d. | T.b.d. | T.b.d. | No | No progress |
| | 11. | Behavioral | Awareness campaign | Workshop March 23 | Awareness campagn will help communication the message and could also be used to explain changes to rules and procedures | Bid document/Local Procedures | 2023 competitions and onwards | Safety WG | No | No progress |

| Mitigation Plan - Pilot fitness | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Identifies hazards | No | Defense type | Raised recommendation, improvement and/or issue | Reference | Comment | Reference to Evidence | Expected Delivery | Responsible | Satisfied | Status |
| Unfit to fly | 3. | Physical | Signs of dehydration | Workshop April 2023 | Measure weight before and after. Look at other ways to measure | Change in Local Procedures | T.b.d. | Safety WG | | No progress |
| Mental state | 4. | Physical | Signs of fatigue | Workshop April 2023 | Subject for study. | T.b.d. | T.b.d. | Safety Project | | No progress |
| Fatigue | 5. | Administrative/ Procedural | Use the IMSAFE checklist | Workshop April 2023 | Promote the use of the commonly known checklist, e.g. at safety briefings before a competition | Change in Annex A | T.b.d. | Safety WG | | No progress |
| Comp. Experience level<br>Tug pilot unfit | 6. | Administrative/ Procedural | Rule change/allow for one day off. | Workshop April 2023 | Can reduce pressure to fly every day, e.g. if feeling unfit | Change in Annex A | T.b.d. | CMWG | | Under consideration by CMWG |
| | 7. | Administrative/ Procedural | Briefing to pilots - signs of mental and physical fatigue, local conditions | Workshop April 2023 | What could be done. Who is responsible. What are the signs. Solution to be looked for. | Briefing material available to Stewards, Safety Officers | Q1 2024 | Safety WG | | No progress |
| | 8. | Administrative/ Procedural | Tug pilots/wx conditions | Workshop April 2023 | t.b.d. | | | | | No progress |
| | 9. | Administrative/ Procedural | Pilot's recent experience | Workshop April 2023 | Also experience on the particular glider type. To be reviewed. Annex A possibly to be updated. | Change in Annex A | T.b.d. | CMWG | | Under consideration in Annex A Comm. |
| | | Administrative/ Procedural | More comprehensive self declaration | Workshop April 2023 | To be developed and tested. | Update local procedures | | | | Under consideration by CMWG |
| | | Administrative/ Procedural | Check of water supply in the cockpit | Workshop April 2023 | Only required at certain venues | Local procedures | Q1 2024 | CMWG | | To be added to local procedures. Action CMWG |
| | | Administrative/ Procedural | CD awareness of signs and effect of pilot fatigue and fatigue in the organisation | Workshop April 2023 | Part of Stewards/CD training | Training material available and implemented | Q1 2024 | CMWG | | Accepted. Will be part of training of Stewards and CDs |
| | | Administrative/ Procedural | Briefing with IGC items | Workshop April 2023 | Part of Stewards/CD training | Training material available and implemented | Q1 2024 | CMWG | | Accepted. Will be part of training of Stewards and CDs |
| | 10. | Administrative/ Procedural | Reserve tug pilots | Workshop April 2023 | Have reserve pilots available in case of fatique | Training material available and implemented | Q1 2024 | CMWG | | Accepted. Will be part of training of Stewards and CDs |
| | 11. | Behavioral | Team Captain - briefing about the importance of being fit | Workshop April 2023 | Stewards Handbook to be updated | Stewards Handbook updated | Q1 2024 | CMWG | | Accepted. Will be part of training of Stewards and CDs |

| Mitigation Plan - Pilot workload/interaction with glider | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Hazards identified | No | Defense type | Raised recommendation, improvement and/or issue | Reference | Comment | Reference to Evidence | Expected Delivery | Responsible | Satisfied | Status |
| | 1. | Physical | Standardization of avionic functions | | Certain functions should be standarized. Manufactores should be invited to work on this. | Meeting with manufactores | T.b.d. | Safety project | | No progress |
| | 2. | Physical | Standardization of engine instrumentation | | As above... | Meeting with manufactores | T.b.d. | Safety project | | No progress |
| | 5. | Administrative/ Procedural | Complexity of task | | Complex tasks can lead to high cockpit workload | Training of CD and Stewards | T.b.d. | CMWG | | Accepted. Will be part of training of Stewards and CDs |
| Distraction<br>Engine test<br>Comp. Pressure<br>Head down time/ Programming of avionics<br>Technical problem Engine start | 6. | Administrative/ Procedural | Avoid late changes to task | | Late changes can lead to stress before take-off. | Training of CD and Stewards | Q1 2024 | CMWG | | Accepted. Always plan B-task before briefing. Will be part of training of Stewards and CDs |
| | 7. | Administrative/ Procedural | Allow sufficient time for preparation before flights | | As above... | Training of CD and Stewards | Q1 2024 | CMWG | | Accepted. Will be part of training of Stewards and CDs |
| | | Administrative/ Procedural | Bonus for landing at an airfield or recognised landing area | | Rulechange to be considered | Change in Annex A | T.b.d. | CMWG | | To be considered |
| | | Administrative/ Procedural | Bonus for starting engine at a safe height | | Rulechange to be considered | Change in Annex A | T.b.d. | CMWG | | To be considered |
| | 8. | Administrative/ Procedural | Demonstrate ability to manipulate avionics system during technical check | | To be included in safety briefing material | Training material available | Q1 2024 | CMWG | | To be considered |