

FLIGHT SAFETY

WINTER OPERATIONS

1. **Introduction.** The purpose of this leaflet is to serve as a timely reminder to all VGS personnel of some of the problems that may be encountered and precautions to be taken during the winter months.

PRECAUTIONS

2. **Frost.** Delay moving aircraft from the hangar during frosty conditions. A cold soaked airframe will gather frost quickly when exposed. This frost will be difficult to clear as it tends to re-form while the air temperature is below zero. Wait until there is evidence of melting, this will save



a great deal of work in the long run. Avoid moving vehicles and aircraft over frost or ice covered surfaces. The slip hazard for personnel on foot is obvious as is the potential for vehicle skidding. Moving vehicles or aircraft over frost covered surfaces will compact the frost turning it to ice, increasing the time it will take to melt. Remember that frost will linger in shadow areas often remaining throughout the day. Use great caution with motor glider wheel-brake checks.

3. **Snow.** Wet snow or slush prohibits flying. Clearing snow from operating surfaces is hard work. An early assessment regarding the viability of flying operations could save considerable effort. Avoid driving vehicles or manoeuvring aircraft on snow covered surfaces, compacted snow will take much longer to melt naturally and is harder to clear manually. Other airfield operators may take a dim view of VGS personnel driving on snow covered airfield surfaces, particularly taxiways and runways, so always check with them before moving. Vikings may operate from dry, crystalline snow of no more than 5 cm in depth, but if you do, you must carefully check the operating areas for hidden ruts or drifts.



4. **Freezing Rain and Fog.** There is little point in taking aircraft from the hangar in foggy conditions. Droplets of water will condense onto aircraft surfaces and if the temperature is below zero, will freeze. Should the fog clear, it may be sometime before the frozen surfaces are clear enough to begin flying. Take great care when freezing rain or fog is forecast. After such conditions have passed,



inspect the airfield operating surfaces and aircraft even more diligently before flying starts. Particular attention should be given to grass surfaces after periods of heavy or prolonged rain. In the winter waterlogged ground will freeze overnight. During the initial airfield inspection surfaces may appear firm enough, but when the ice melts the surface will become soft or boggy. Aircraft landing or taxiing through these areas will have their progress

severely retarded and could even cause motor gliders to tip onto their nose.

5. **Wind Chill.** The stronger the wind the lower the skin temperature can get due to wind chill. Any water on the exposed skin will evaporate, causing even more cooling. All personnel involved in outside activities should keep themselves warm and dry. Supervisors must monitor and rotate the duties of those involved in outside activities in wind chill conditions. They should ensure that hot drinks are always available. Cable orderlies require mats to kneel on when attaching the cables.

6. **Clothing.** Ensure winter joining instructions for visiting cadets specify the type of clothing recommended for a day on a cold, wet, windy airfield. Contact Gliding Liaison Officers and brief them on clothing requirements so that they can pass this information on to squadrons. Sound footwear is particularly important, trainers or light shoes are not suitable for duties outside the glider. Some form of warm headgear and a pair of gloves is essential. Cadets frequently do not appreciate (until they are really frozen), how cold and miserable it can be when they dress unsuitably. They need to be aware that to keep themselves warm on an airfield they must bring the same sort of clothing as they would need on a mountain trek or when skiing. Telling them afterwards that it is their fault that they are cold is unhelpful and shows bad supervision and planning. Supervisors must watch for signs of hypothermia in staff and visiting cadets. Hypothermia occurs when the body's core temperature is lowered due to exposure to cold. It can occur even at mild temperatures if exposure is prolonged. The body's natural defences against the cold consist of restricting the flow of blood to the skin so as to prevent heat loss, along with shivering and releasing hormones to generate heat. These measures are limited and are usually inadequate to maintain body temperature in cold environments. Symptoms take effect in three stages:

- a. The first stage - mild hypothermia - is characterised by:
 - i. Bouts of shivering;
 - ii. Grogginess and muddled thinking.
- b. Indicators of moderate hypothermia are:

- i. Violent shivering or shivering which suddenly stops;
 - ii. Inability to think and pay attention;
 - iii. Slow, shallow breathing;
 - iv. Slow, weak pulse.
- c. Severe hypothermia has set in when:
- i. Shivering stops;
 - ii. The patient loses consciousness;
 - iii. There is little or no breathing;
 - iv. Pulse is weak, irregular or non-existent.

AIRCRAFT PREPARATION

7. Don't be in a rush to fly. Take greater care with aircraft servicing and general preparation. Ensure that all surfaces are clean and dry, wheel boxes/fairings clear of mud or frozen slush, canopy vents operate satisfactorily and canopies spotless. Clean canopies means less misting, so ensure they are thoroughly cleaned (inside and out) and ensure you have the means to wipe canopies in the event of misting in flight. Extra care must be taken though, when cleaning canopies in the winter, as the Perspex becomes more brittle when cold. Vigilant squadrons will make use of the cabin heating system, so ensure that the Dead Stop carbon monoxide indicator is securely fitted and in date. Carbon Monoxide is colourless, odourless, tasteless, insidious in its effects and LETHAL.

AIRCRAFT OPERATION

8. **Carburettor Icing.** Rough or erratic running motor glider engines both on the ground, and in the air, can be due to carburettor icing. Use the carburettor warm air when you suspect icing. After the initial engine start, don't be in too much of a hurry putting the choke away. Leaving some choke applied while the engine warms up will help prevent the minor coughs and splutters that are often experienced.

9. **Airframe Icing.** In the unlikely event of airframe icing, descend if practical, to below the freezing level. If the wings still have ice or rain on them, increase approach speeds by 5 kts.

10. **Mist & Fog.** Know your limits! TGO(G) TE(G) 395, gives the minimum permissible visibility limits. However, when fog is forecast, supervisors need to exercise even greater vigilance. They may need to limit the number of aircraft airborne and the minimum experience level of aircraft commanders. Fog may suddenly return during the operating period, or begin reforming in the evening. Beware of poor slant visibility or thick haze layers where stratus may form.



OTHER FACTORS

11. **Water Freezing.** Keep water-based fire extinguishers protected. Do not wash airframes when freezing of the water on the airframe is likely. Drain caravan water tanks after the gliding operation finishes. Hangar door tracks regularly freeze in winter preventing the doors from opening. To avoid this ensure that the tracks are free of debris and as far as possible water.

12. **Lowering Sun.** When the sun is at a low elevation it can be, at the very least, a distraction or at the worst, blinding. Most instructors use sunglasses, few trainees are so fortunate! However, sunglasses will present their own hazard particularly if they are of a dark tint. Being plunged into dark shadow from say a hangar after looking into the bright sun can be debilitating. Instructors must be aware, particularly when teaching landings into-sun, of the need to stop flying before conditions become hazardous. Sun on snow or frosty surfaces produces a particularly bright glare and results in ground undulations being very difficult to see.

13. **Very Low Temperatures.** Keep winches and diesel vehicles inside to avoid waxing the diesel fuel. All batteries need careful monitoring in cold conditions. Charge all batteries well before flying e.g. on Friday evenings. During Flying operations at motor glider squadrons, ensure that the FRV is run at regular interval (TE(G)313.125.3d). Do not touch metal with bare hands.

14. **Wet Canopies & Misting.** Keep a ready supply of clean chamois leathers and clean dry cloths in the caravan to wipe off any external or internal moisture. If the inside of the canopy is kept scrupulously clean this will help to delay canopy misting. Be ready to stop flying at the first sign of heavy condensation on airframe surfaces or canopy misting.

**HAVE A SAFE AND TROUBLE
FREE WINTER SEASON**

Bob Samme

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FSO(G)