SSF Soaring Safety Foundation

Scanning – to look for information

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Looking for traffic and verifying our gliders position in space requires us to visually gather information from the environment. We scan the environment outside the glider for traffic and other hazards. We scan our instrument panel to verify that the visual cues we gathered from outside are valid.

How do we scan – we move our head and eyes around to gather information from multiple available sources.

What do we scan for – current information from "need to know" locations

How do we know what information we need/desire - your brain decides based upon current events.

So, let's think about a scenario: searching for lift : What do we need to know?

- Is the glider sinking at normal rate? Vario indications
- Is airspeed normal for searching? Pitch attitude
- Is my altitude sufficient for what I am trying to do? Altimeter reading
- Are there indications of lift in some direction? Gliders, girds, clouds
- Can I reach a suitable landing area if the lift doesn't work? Terrain features

Your visual scanning gave you the information you needed to make decisions. Your aeronautical knowledge and experience allows you to determine if those are high or low risk decisions.

Basic control of the glider in flight is accomplished by seeing the attitude of the glider relative to the horizon. You also use the "feel" and the sounds the glider makes while flying through the air. Too slow – quiet sounds, nose pointing too near the horizon, controls feeling little resistance to movement. Too fast – lots of noise, nose too far below the horizon, glider reacts abruptly to controls inputs. Wings not level – too much or too little bank angle of the horizon and the glider turning towards the low wing or the yaw string displaced as the pilot tries to keep from turning by applying opposite rudder. All these general evaluations are made by the pilot without reference to instruments in the cockpit.

So why do we have instruments at all?

The successful glider flight requires locating rising air and maneuvering the ship to stay in it. A bump in the seat of the pants may indicate rising air and experience will tell you where to locate the updraft. Cockpit instruments can greatly refine your feel and indicate the rate of climb you are achieving.

Meanwhile the pilot is looking outside to determine nose position, bank angle and using a combination of pitch attitude, feel, and sound to determine airspeed. Pitch altitude is judge by reference to the horizon.

Then, why instruments?

Our senses can be confused by such things as G loads, a sideways gust (wind noise) unusual cloud formations (tilted clouds/ dangling edges), our atmosphere is always moving. Instrument readings can help clarify the situation.

Perhaps most importantly, when flying near the ground such as landing or ridge soaring or near other things such as gliders during gaggles you may need more information to efficiently maneuver your sailplane.

Perhaps the most common misconception about "gathering information" from your instruments is

STARING INSTEAD of SCANNING

Keep your eyes moving as you look across your instruments. Remember you are looking for INFORMATION. An unexpected buffet or sloppy control forces may trigger a need to check airspeed. Glance at the airspeed indicator but don't stare EVEN THOUGH YOU DON'T LIKE THE VALUE YOU SEE. STARING AT IT WONT MOVE THE INDICATOR. Take the information and respond appropriately AND keep SCANNING. Sometimes unexpected things might show up e.g.; spoiler, flap, gear lever position.

The physiology of the eye is well known to the experienced glider pilot. Proper visual scanning techniques have been developed to compensate for the known limitations. Scan in sectors stopping momentarily in each to focus on a distant object. Motion is detected by your peripheral vision and constantly moving your head means everything in your field of view is moving. Focusing on a distant object increases the odds that you will detect those things that are moving in that sector.

That said, remember that another glider on a collision course will have no relative motion, making it harder to detect. Electronic collision avoidance devices like FLARM, PCAS, ADS-B can assist, but do not replace the need to, constantly visually scan for traffic and other threats.

When scanning the instruments glance at them and look for trends and indications of change. Use a common scan routine that takes in information from them. That means glance at the ASI, Altimeter, Vario, and compass in a sequence you find comfortable and then look outside again. Now interpret the results. Where any of the indicator needles moving and if so in which direction. Is it radically different from what you expected? If something seems different from your expectation, glance at that instrument again and verify that reading or trend. Then take the appropriate action to correct the situation.

Remember: KEEP SCANING INSIDE AND OUTSIDE THE COCKPIT. You might see the altimeter going up, the compass pointing at a "wrong heading" or maybe a climbing bird or cloud forming or glider coming straight at you.

MOVE YOUR HEAD and EYES TO SCAN. Oh, and ENJOY THE VIEW

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