

CHAPTER 16: AERONAUTICAL DECISION MAKING

There is more to being a safe pilot than being able to control your glider. In this chapter, you will learn how to increase your situational awareness, how to improve your judgment by learning a systematic approach to decision making, and how to develop the self-discipline to follow through with your decisions.

16.1 Situational Awareness

When flying a glider, you are bombarded with information. You experience sights, sounds, and sensations unlike those that you experience on the ground. During your first flight lessons, you will probably find that you have difficulty perceiving much of what is happening.

Eventually, however, you need to develop an awareness of the factors that affect, or will affect, your flight. By simply being aware of a developing situation, you can often take action to prevent it from becoming a problem.

What is Situational Awareness?

Situational awareness can be defined as an ability to accurately perceive and interpret what is happening, and to predict what is likely to happen next. A pilot with good situational awareness always anticipates upcoming events, and is able to prioritize information based on its urgency and potential impact on the flight.

Perceive

To perceive what is happening, you must be looking for information. You must know what information is useful, and have enough time to look for it.

Interpret

To interpret information that you have gathered, you must understand the nature of the information and have knowledge about the environment in which you are operating. You must know what the information means and how it applies to your situation. This is why it is essential that you have a solid foundation of aeronautical knowledge.

Predict

To anticipate what will happen based on your interpretation of what you perceive, you must have a mental model. The mental model can be based on knowledge or experience.

Areas Requiring Situational Awareness

A few of the many areas in which you are required to demonstrate situational awareness are discussed below.

Flight Planning

When you plan a flight, whether it is a quick hop with a friend or a long cross-country flight, you should be aware of information that could affect your flight. You need to consider such things as your skill level, weather, winds, expected lift, traffic, NOTAMs, etc.

Flying the Glider

While you fly the glider, you must constantly monitor its pitch, roll, and yaw, as well as your altitude and airspeed. If you hope to soar, you must also be able to detect and use lift.

Glide Slope Management

When in the air, you must always be aware of your position with respect to the nearest safe landing area, and know how much altitude you need to get there.

Traffic

You should always be aware of other traffic, including gliders, birds, or powered aircraft.

Weather

You should be aware of how the weather is developing. You should notice clouds that indicate lift and clouds that indicate hazardous conditions such as thunderstorms. You should be aware of the wind speed and direction, and know how it could affect your glide slope management, your pattern, and landing.

Obstacles to Good Situational Awareness

Many factors can reduce your situational awareness. You should be alert to these factors and try to eliminate as many as possible.

Ignorance

If you do not know how a given situation may affect you, you may not notice the situation to begin with. Ignorance is one of the most avoidable obstacles to good situational awareness.

Fixation

If you fixate on one piece of information, you may be unable to perceive other, possibly more important facts. Fixation is often a problem with students learning a new skill. As a student progresses, the problem should subside.

Fixation can also be a problem when an unusual occurrence, such as the canopy coming open during a tow, distracts you from monitoring more mundane information, such as your position behind the tow plane.

Prioritization Errors

Often, there is limited time to monitor or act on information. You must prioritize items based on the risk and urgency each one presents.

If you have incomplete knowledge, you may be unable to correctly prioritize information. It is important not to simply deal with problems as they appear, but to be able to recognize which problems are most important.

Overload

When learning new skills, students often become overloaded and unable to monitor their surroundings. With time, practice, and proficiency, students are generally able to increase their situational awareness to an acceptable level.

Overload can also happen to experienced pilots. Especially when preparing to land, a pilot must deal with tuning the radio and making radio calls, configuring the glider properly for landing (gear, flaps, dumping water ballast), searching for traffic, checking the wind, checking the runway/field, flying an appropriate pattern, and of course, controlling the glider. Proper planning and proficiency help to reduce the workload to a manageable level.

Overload can also be caused by distractions and interruptions, as they divert your attention from your priorities. It is crucial that you not fixate on a distraction or interruption to the detriment of more important tasks.

Complacency

Complacency can reduce your motivation to maintain situational awareness. Complacency can develop when you consistently have a positive outcome from a given situation. Eventually, you may fail to look for the hazards that are involved with the situation.

Fatigue

The more fatigued you are, the easier it is to become overloaded, or to simply miss important information.

Enhancing Situational Awareness

The best way to improve your situational awareness is to do things that decrease your workload.

Maintaining Flight Proficiency

When you are not proficient at basic flight skills, too much of your attention may be focused on keeping the glider under control. This is often the case during training, when as soon as a new task is added, a student can no longer satisfactorily perform other tasks that had been previously mastered.

As your flight proficiency increases, you will free up attention that you can allocate to improving your situational awareness. By staying proficient, you will also reduce the tendency to be overloaded and to fixate.

Knowledge

Proper knowledge allows you to perceive information that is important to your safety. It also helps you to comprehend and prioritize the information that you perceive.

Knowledge of hazards helps you to avoid complacency by keeping you aware of the dangers involved in a situation. You can learn about hazards in two ways, through personal experience, or by learning from the mistakes of others. The second method is the preferred one.

It is important to know as much as possible about the environment in which you are operating. This includes knowing yourself and your physical, mental, and emotional limitations; knowing your glider and its airspeed and structural and performance limitations; knowing the area in which you are flying, including its airspace type, nearby safe landing zones, and the weather conditions you are likely to encounter.

Preflight Planning

Thorough preflight planning, including contingency planning, can increase your alertness to information that you should perceive during a flight. For example, knowing from the weather forecast that thunderstorms are possible, you would be more alert to rapidly building cumulus clouds.

Preflight planning also reduces your in-flight workload, increasing the time you have to allot to scanning for pertinent information.

Confirming

You should constantly confirm what you think you know. This helps you to avoid making decisions based on erroneous or outdated information.

Situational Awareness Self-Assessment

Once your situational awareness diminishes, you may present a danger to yourself or to other pilots. Therefore, it is important for you to be able to assess and acknowledge your current level of situational awareness. The following are signs that your situational awareness is reduced.

Confusion/Uncertainty

If you are having trouble prioritizing, or feel confused or uncertain as to what action to take, you are probably operating at a decreased level of situational awareness.

Fixation

Staring at one instrument or thinking exclusively about one problem indicates that you are fixating, and have therefore lost situational awareness.

Getting "Behind the Glider"

Good situational awareness enables you to stay ahead of your glider. When you lose situational awareness, you will find yourself reacting to, instead of anticipating upcoming events.

If you find yourself consistently losing situational awareness, you should identify the causes and take measures to eliminate them.

16.2 Judgment

As glider pilots, we constantly have to make decisions. Most people function quite effectively making decisions based on intuition. In aviation, where the consequences of poor judgment can be severe, it is preferable to have a more systematic approach to decision making.

A Systematic Approach to Decision Making

When making a decision, you need to systematically consider all the elements involved.

Benefit

What can be gained?

Hazard

What could go wrong?

Risks

What are the chances of encountering the hazard?

Consequences

What will be the result if the hazard is encountered?

Preventions

What can be done to reduce the chance of encountering the hazard?

Precautions

What can be done to minimize the consequences of encountering the hazard?

Example: Speeding

Consider a situation that most car drivers have made at one time or another: the decision to exceed the speed limit. The **benefit** of this decision is that you will get

to your destination sooner. Two **hazards** to speeding are that you could get a ticket, and you could have an accident. The **risk** of getting a ticket is relatively low in most places, and the risk of having an accident is probably even lower (depending on your experience as a driver and traffic and road conditions). However, the **consequences** of having an accident vary from damage to your or someone else's vehicle, to injury or even death. The **consequence** of getting a ticket is a financial loss. **Preventions** that you could take to reduce the risk of getting a ticket would be to not be the fastest driver on the road or to get a radar detector. **Preventions** that you could take to reduce the risk of an accident are to make sure that your car is in good working order, and that you eliminate distractions (Hang up the cell phone!) A **precaution** you can take to reduce the consequences of getting a ticket are to not speed too excessively, which will also act to reduce the consequences of getting into an accident. Wearing your seat belt is another **precaution** that could reduce the consequences of getting into an accident.

Values

Decisions can only be judged in reference to the values of the decision maker. A competition pilot who values winning more than not damaging his glider may make a very different decision than a pilot flying a rented or club glider. Neither pilot's decision is good or bad, just more or less appropriate given the values of the pilot.

Obstacles to Good Judgment

Undefined Values

If you do not have a clear and well thought out set of values, you may find yourself asking yourself after a flight, "Why did I do that?" concerning risks you may have unnecessarily taken. To make consistently good decisions (i.e., decisions appropriate to your values), you must first know what your values are.

Unstructured Decision Process

If you do not take a systematic approach to decision making, you may find it difficult to have confidence in your decisions, especially when they must be made quickly.

Another problem with not using a systematic approach to decision making is that your decisions may be somewhat random. This may lead you to feel that the outcome of a situation is out of your control. You might come to believe that good outcomes are the result of "good luck", and bad outcomes the result of "bad luck". This attitude of resignation can lead a pilot to encounter much more bad luck than good luck! It is important to realize that you can take control of a situation and make a difference for the better.

Urgency

Sometimes, a decision has to be made immediately, with not enough time for considering all the elements. This can lead to a less than optimal decision.