

Aeronautical Decision Making (ADM)

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In a recent article from SSF, you learned the value of incorporating Scenario Based Training. In this article, I would like to review the basics of ADM, and how it can be learned, and taught.

First, consider the pyramid of the 4 underlying skill sets that promote good decision making. The platform upon which all good flying resides is Technical Proficiency. This is the sum total of all your stick and rudder skills, accumulated knowledge, and overall physical readiness for flight. As you might suspect, your Technical Proficiency changes from season to season, and in fact, from day to day as you learn, and later forget pieces of knowledge. (FAR's, Pilot Operating Handbook Ops Limits, etc.) Also, since flying is a physical skill, continuity and competency pretty much go hand in hand. Since many of us fly our gliders seasonally, it makes sense that we usually fly much better in mid-season than we do on the first flight of the year. Practice makes us better!

Next up is Leadership and Team Building, which are obviously of great importance throughout a flight for multi-place crews, but not very applicable to single pilot operations inflight. However, during assembly, staging, and aero tow, even single pilots need to work as part of a team. To promote good team building, meet all the members, let them know your needs and goals, and specify limitations. Some examples might include warning an assistant that the wings or tail section are especially heavy, or that wing tips should not be pulled on during staging. Another important team to build is with your tow pilot; have a face-to-face briefing that includes important factors like your wing loading, (dry or ballasted?) a discussion about Density Altitude effects, and which runway (hard surface or parallel grass?) should be used.

Moving up the pyramid further, we find Effective Communication. You might be the Ace of the Base when it comes to keeping the string centered and finding lift, but if you cannot communicate with others, you will be relegated to a rather small effective audience of one. Good communication requires a closed loop between sender and receiver, with feedback that can verify the correctness of the message sent, and that it was understood as intended. Remember that the majority of communication, and barriers to it are found in non-verbal cues, such as body language. Absent physical presence, such as during radio communication, tone and pitch are very influential.

Now comes the issue of Situation Awareness, often abbreviated as SA. It is the sum of your current orientation in space and time, to include things like where you have just been, where you are now, and where you are going. Said another way, SA includes an accurate perception of what you just did, what is happening right now, and what you want to have happen in the near future. SA is important because it is here that Threat Perception and Threat Detection take place. If you

get that prickly doubt, that feeling sometimes described as “hair standing up on the back of your neck,” that something is not quite right, it could be that your SA is either slipping, or trying to tell you something. We like to say that “Doubt means Danger,” so when you have one, look around, and make sure you have a good handle on your SA. Some of these doubts could be in the form of ambiguity or confusion, preoccupation with a non-flying task in the cockpit, or simply not communicating with yourself (yes, many pilots “self-talk” while they fly, either verbally or silently) or others. Other doubts that are red flags to the degradation of SA might surface in the form of rushing, (it never helps!) violating Standard Operating Procedures or Pilot Operating Handbook limitations, or interrupting or disregarding normal habits or checklists.

Keeping up good SA will allow a pilot to identify threats, and counter them before they can escalate into something beyond control. Incidents and Accidents are usually accompanied by at least two of these red flags that were not identified, that lead to a situation beyond the ability of the pilot to correct.

Keeping good SA will allow pilots to take in accurate information, assess the current circumstances, and make effective decisions. So, now that we understand the principles, let’s review a possible example, incorporating SBT.

Our scenario will be planning and conducting a 750 km FAI triangle out in my favorite location of south central Utah. The soaring forecast is for cloud bases above 18,000 ft, with lift of 8 kts or better. The triangle is planned as a take-off from Parowan, en-route to the first turn point to the southwest of Parowan, a mountain peak known as Pine Valley, continuing north to Ely, NV, then east to Skinner Peak, with a return to Parowan, for a total distance of 780 km.

The early lift in Parowan is weak in the valley, but gets better up to 14,500 over the high ground to the southeast. Virga is present, and avoided by a speed run to Pine Valley, followed by a long climb in good lift to 17,500, with stick forward north bound to Ely, NV. SA is challenged by two walls of virga with a safe valley passage that requires a dog-leg off course, but the lift is worth it. Turning east from west of Ely, strong lift dictates a fast glide, but, all of a sudden, the air is smooth, and the only cloud in sight is in the middle of R-6405 to the north. A call to ATC with mode 3A and C active costs dear battery life, but results in a clearance into the Restricted Area, and a life-saving climb. Progress east to the last turn point is slow, now dictated by passage over a seasonal lake bed that while dry, is not the thermal generator that the surrounding high terrain is. Rounding Skinner Peak at 4 pm, the race is on to make Parowan by legal sunset. The lift is good, but winds out of the south bring groundspeed down to 75 kts-is there time to complete the task before dark? Pressing on results in several land versus continue decisions, mediated by continued good lift, but the absence of clouds to signal its presence.

The result? A flight of 890 km flown around the declared 750 km triangle, with a landing just minutes before official sunset. Throughout the above actual flight, many good in flight decisions

were made by having good Technical Proficiency, having prepared well to allow the basis for getting and keeping good SA, and staying on top of the game. This process can work for you!