Critical Weather Situations and Emergencies

Critical Weather Situations

We are always dealing with weather decisions, but there are some situations that are critical. Get a thorough weather picture before flight, and keep it up-to-date in order to avoid these situations.

External Pressures: Have an Alternate Plan

Build in defenses against pressures to fly despite your doubts. Have a reasonable "plan B" prepared, in case the weather or aircraft condition makes flying today not a great idea.

Deteriorating Weather Requires Escape Plan

Any time the weather forecast is trending from good to less good, have a route or airport planned to use in case the lower weather occurs faster or is worse than you expected.

Level Changes Forced by Clouds Are a Warning—Reevaluate Plan

If the the clouds en route are forcing you to change your altitude unexpectedly, you are no longer in control. When this happens, reevaluate your plan, and consider executing your escape plan.

Before you climb on top of a layer, decide on a maximum top that you will climb over. If it looks like you will have to climb even higher to stay on top, execute your escape plan.

Flight Into IMC

Flight into IMC is a full emergency (unless you are instrument rated and are flying IFR). Transition to your instruments, and start your scan. Declare an emergency (see below) and get out! The fastest way out is usually a 180° turn back to the non-IMC weather you just came from. In the clouds, you might want to turn on pitot heat (to prevent pitot icing), and turn off strobe lights to prevent being dazzled.

When you make the 180° turn, make it a smooth standard rate turn. Don't "yank and bank" because you were startled by entering IMC. If the weather has closed up behind you, you may need to climb or descend. ATC can help with weather information. Don't descend below roughly 2000 AGL if you can't clearly see terrain and obstacles.

Thunderstorms and Low-Level Wind Shear

Give thunderstorms a 20 NM berth. If a line of thunderstorms is approaching, land at least 20 NM ahead of the thunderstorms, and await passage. Remember that air mass thunderstorms ("pop up" cells) happen in the afternoon. Also remember that mature thunderstorms will have a gust front around them, radiating out possibly tens of miles.

Fog

You can overfly fog, but you won't be able to land—it may look OK from above, but the visibility in it is IMC. If fog shows up unexpectedly, you must reevaluate your plan.

Freezing Rain

Encountering freezing rain is an emergency. It will accumulate on the airframe and quickly overload the aircraft. Immediately turn around.

Recognizing an Emergency

If any of these questions can be answered as "yes", then you have an emergency:

- ☐ Is the flight in immediate danger?
- ☐ Are you concerned about the safety of the flight?
- ☐ Does the flight require immediate/timely assistance for safety?
- ☐ Will the flight need priority handling by ATC?
- ☐ Might immediate/timely safety assistance be needed on the ground?

Definitions:

— Emergency: A distress or an urgency condition.

— Distress: A condition of being threatened by serious and/or imminent danger and of requiring immediate assistance.

— Urgency: A condition of being concerned about safety and of requiring timely but not immediate assistance; a potential distress condition.

Declaring an Emergency

Comm: If talking to ATC, stay on frequency! If not talking to ATC, and can't quickly switch to an ATC frequency, use 121.5.

Transponder: If squawking 1200, squawk 7700. If assigned a code and talking to ATC, keep your assigned code.

Radio call: Start with "mayday mayday mayday" or "pan-pan pan-pan pan-pan", station called, your call sign, and then three things:

1. Nature of emergency
2. Intentions
3. Position, altitude, heading (if relevant).

Example: "Mayday mayday mayday, Houston center, Skyhawk 413ES, engine fire, forced landing near Thorndale, 2,500, heading 270."

You can "un-declare" an emergency: just say "cancel distress" or "cancel urgency".

Other Emergencies on Frequency

If you hear a "mayday", don't use the frequency. If you hear a "pan-pan", carefully avoid interfering with their transmissions. If you hear an emergency call go unanswered, reply and give whatever assistance possible, and advise ATC.

Low Fuel

Declare "minimum fuel" if you think you'll land at your *destination* with less than your required reserve. "Minimum fuel" is not an emergency declaration, but a warning to ATC. Declare "mayday mayday mayday fuel" if you can't get to the *nearest airport* with your required reserve. (Remember, the final (required) reserve is there for you to use for unexpected situations.)

ATC Emergency Assistance

ATC can help in an emergency, but controllers aren't pilots. You must tell then what you need and you must keep your *pilot-in-command* mindset. Tell the controller, for example, that you:

— Can accept turns & level changes, but not at the same time
— Want no-gyro vectors
— Single frequency (no frequency changes) until VFR

You can also ask ATC for all kinds information, like the nearest airport, weather, frequencies, altitudes, etc. You can have ATC contact other facilities, or arrange assistance. Use ATC as an extended part of your flight crew to reduce your workload. Don't ask ATC to make choices for you, though.

ATC has their own emergency checklists that include asking you for information. Sometimes that can be a distraction to you, so if you don't have that info or don't have time, just tell them that. Think of ATC as your professional (but non-pilot) assistant who works for you.