Managing Priorities During IFR Flight

On average, it takes only 178 seconds—less than three minutes—for non-instrument rated airplane pilots to lose control of their aircraft after inadvertently flying into instrument meteorological conditions. Because helicopters are inherently less stable—and often less equipped—than their fixed-wing counterparts, one could safely assume that it takes less time for equally qualified helicopter pilots to lose control of their helicopter in similar conditions.

Drawing from the statistics, more than two thirds of all weather-related helicopter accidents result in at least one fatality—a rate three times higher than other general aviation accidents. A common factor in many of these accidents was the pilot’s decision to “press on” into further deteriorating conditions. The challenge for helicopter pilots during instrument flight is to schedule their activities so they are able to devote their full attention to the critical task at hand. Throughout training, pilots are constantly reminded to aviate, navigate, and communicate—in that order. This common prioritization schedule is often emphasized as a defense mechanism to cue pilots away from non-essential activities attempting to lure their attention away.

Losing Control

The notion of “use it or lose it” is certainly true when it comes to maintaining instrument proficiency. Since helicopters are predominately operated in VFR conditions, and since most helicopters are not even IFR certified, instrument flight skills can quickly become rusty. Given the prominent news coverage of weather-related accidents involving helicopters, instrument proficiency has become a major concern in the helicopter industry.

Many helicopter pilots believe SOPs exist only for crew members flying large helicopters involving Part 135 operations. Wrong! Every pilot should develop and implement SOPs for all flight operations, regardless of the type of helicopter he or she is flying. SOPs can help prevent unfortunate circumstances from occurring by preparing pilots to handle both normal and abnormal events. Unfortunately, many pilots allow the habit of using checklists and SOPs to fade over time. SOPs add structure and an enhanced level of safety by helping pilots implement best practices and techniques applicable to all situations.
**Priorities in the Muck**

Much like flying helicopters, driving cars involves setting priorities on that which matters most—getting from point A to point B safely. Many accidents occur because drivers and pilots get distracted by low-priority issues. Safety experts strive to mitigate these occurrences; however, yearly results continue to indicate that lack of focus on time-critical priorities is becoming a leading cause of human error.

Scanning behavior plays a major factor on how pilots prioritize in the cockpit. Having an understanding of how events best channel pilot attention is a top priority for helicopter systems designers. This perspective helps manufacturers develop helpful tools for ensuring pilots are focused on high-priority issues during all phases of instrument flight. Learning to set priorities correctly in timely situations takes time and experience so be careful in pressing your luck beyond your normal comfort zone.

**Contingent Ninja**

Mental preparation plays a key role in determining success when flying on instruments. Whether a particular flight involves training, a cross-country, or an evaluation, the amount of preparation is usually reflected in the overall results. Flight plans are likely to change on a nearly constant basis and so it is thus incumbent upon pilots to develop every flight plan with contingency and flexibility in mind.

A great habit before any instrument flight is to mentally rehearse the event from start to finish. Think through the flight as planned, and then make contingency plans should the flight have to change because of weather, mechanical problems, or other unforeseen reasons. It’s much easier to execute a well-thought-out contingency plan than it is to make radical changes during flight. From beginning to end, safety starts before we get into the helicopter and ends only when we’ve secured it after landing.

Another advantage of contingency planning is that it allows helicopter pilots to make small adjustments as opposed to reacting to circumstances that could have been mitigated from the very start. Pilots who approach instrument flying using a defensive mentality often experience greater satisfaction in knowing they have thought through various scenarios beforehand and haven’t left much to chance. Well thought out tasks that have been prepared on the ground often yield positive results when decisively executed in flight.

**Multitasking Myth**

During instrument flight, pilots are tasked with concurrent events drawing for their constant attention. The ability to handle concurrent tasks is essential, but at times difficult because these events often present themselves unexpectedly. A major factor influencing time-sharing skills in the cockpit is the integration of technology. Systems designers, cockpit layouts, and automation have a strong influence on pilot attention and how priorities are set and managed.

Studies indicate preoccupation with one priority is most likely to be detrimental to the accurate completion of another. When trying to sort through priorities, pilots consider the level of urgency, the criticality of the event and the amount of time a situation is going to require for bringing resolution. These factors are consciously and subconsciously considered by helicopter pilots each time their priority schedule changes.

Research indicates if an ongoing task requires considerable mindful resources, it is nearly impossible to effectively perform a secondary task simultaneously. If an ongoing task is interrupted by a lower priority event, the subject must learn how to allocate his or her attention in handling both tasks concurrently—or deal with each task separately when time permits. Again, preoccupation with one priority is most likely to be detrimental to the successful completion of another.
Missing Out

The missed approach procedure associated with an instrument approach has caused many helicopter pilots by surprise. If not properly briefed and prepared for, the missed approach procedure can be a highly complex phase of flight. Since most instrument approaches end with a successful landing, many pilots do not adequately prepare for the possibility of having to fly the missed approach procedure. Because missed approach procedures are executed close to the ground at low airspeed, pilots can rapidly become task saturated with little to no room for error.

Pilots who are triggered to fly the missed approach prior to starting the procedure will greatly reduce workload and increase the likelihood of successfully executing this critical maneuver. A false sense of security during the approach and missed approach phases of flight can lead to disastrous results.

Don’t Be Startled

The question of why one event in the cockpit stimulates a pilot’s attention over another causes many people to scratch their heads. Generally speaking, humans are able to perform two tasks concurrently in limited situations, even if they are skillful at each task separately. A helicopter pilot may be exceptionally skilled at programming the Flight Management System (FMS) and at maintaining situational awareness, but while that same pilot is conducting one of these events, the preciseness of the second is likely to suffer.

Unfortunately, something has to give.

Research reveals that it can take as much as seven to eight seconds for pilots to properly respond to a startling event in the cockpit. Pilots who play “what if” scenarios before every instrument flight are able to reclaim precious seconds for improving their chance of success should the unusual happen during flight. Simply put, these exercises train the mind to respond positively in less time while also increasing efficiency and passenger safety.

An excellent way to prepare for the unexpected is to develop a mindset of expectation: Before each flight, mentally tell yourself, “Today is the day that I’m going to experience an engine failure or an unusual circumstance.” Though it might sound overly pessimistic, this mental exercise can reduce the chance of being caught by surprise. Whether flying solo or with passengers, pilots who perform this mental rehearsal can shave precious seconds off response rates in reaction to unusual events.

Bottom line: be prepared for those days when perfect weather conditions suddenly disappear. Invest in your skills and understand what your options are when flying in instrument conditions. If already instrument rated, maximize as much flight time under simulated instrument conditions with a qualified instructor on a regular basis. If not already instrument rated, make the investment. Instrument training enhances Aeronautical Decision Making and will vastly improve piloting skills— an investment well worth the time and money.

Dr. Steve Sparks is the Coordinator for the US Helicopter Safety Team (USHST) specializing in flight training, pilot development, and helicopter operations. He also Chairs the USHST Human Factors “Staying Alive” Working Group which focuses on mitigating helicopter accidents resulting from human error.