



Flight Risk Assessment Tools

When implementing a Safety Management System (SMS), one of the most critical components to develop is a Flight Risk Assessment Tool (FRAT). Because every flight has some level of risk, it is critical that pilots are able to differentiate, in advance, between a low risk flight and a high risk flight, and then establish a review process and develop risk mitigation strategies. A FRAT enables proactive hazard identification, is easy to use, and can visually depict risk. It is an invaluable tool in helping pilots make better go/no-go decisions and should be a part of every flight.

Why Should I Use It?

“In the thick” is no time to try to mitigate a potentially hazardous outcome. When preparing for a flight or maintenance task, operators and maintenance technicians should take time to stop and think about the hazards involved.

Attempting this task “in our heads” usually does not take into account actual risk exposure. The mind tends to compartmentalize the individual hazards which, in turn, fails to appreciate their cumulative effects. We may also allow our personal desires to manipulate our risk assessment in order to meet personal goals. The best way to compensate for these inherent shortcomings is to take the task to paper.

Putting everything on “paper” allows us to establish our risk limits in an atmosphere free from the pressure of an impending flight or maintenance task. It also gives a perspective on the entire risk picture that we cannot get in our heads. More importantly, it sets the stage for managing risk through proactive risk mitigation strategies that are documented.

Although designs can vary, FRATs generally ask a series of questions that help identify and quantify risk for a flight. The FAA Safety Team’s current FRAT tool (an automated spreadsheet available at go.usa.gov/xkhJK) follows the PAVE checklist, covering questions on the Pilot, Aircraft, enVironment, and External Pressures. For example, you may be asked how much rest you’ve had, how much time you’ve had in the aircraft, and what the weather conditions are for your destination. Based on the answers you supply, a total risk score is calculated.

The form is titled "RISK ASSESSMENT" and includes fields for Pilot's Name, Flight From, and To. It is divided into several sections:

- SLEEP:** 1. Did not sleep well or less than 8 hours (0-2), 2. Slept well (0-0).
- HOW DO YOU FEEL?:** 1. Have a cold or ill (0-4), 2. Feel great (0-0), 3. Feel a bit off (0-2).
- WEATHER AT TERMINATION:** 1. Greater than 5 miles visibility and 3,000 feet ceilings (0-1), 2. At least 3 miles visibility and 1,000 feet ceilings, but less than 3,000 feet ceilings and 5 miles visibility (0-3), 3. IMC conditions (0-4).
- HOW IS THE DAY GOING?:** 1. Seems like one thing after another (late, making errors, out of step) (0-3), 2. Great day (0-0).
- IS THE FLIGHT:** 1. Day? (0-1), 2. Night? (0-3).
- PLANNING:** 1. Rush to get off ground (0-3), 2. No hurry (0-1), 3. Used charts and computer to assist (0-0), 4. Used computer program for all planning (Yes/No) (0-3), 5. Did you verify weight and balance? (Yes/No) (0-0), 6. Did you evaluate performance? (Yes/No) (0-3), 7. Do you brief your passengers on the ground and in flight? (Yes/No) (0-2).

At the bottom, there is a "LEFT COLUMN TOTAL" and "RIGHT COLUMN TOTAL" leading to a "TOTAL SCORE" field. Below the form is a risk scale from 0 to 30, with a color gradient from blue (Low Risk) to red (Endangerment). The scale is divided into four zones: 0-10 (Not Complex Flight), 10-20 (Exercise Caution), 20-30 (Area of Concern), and 30 (Endangerment).

Example Risk Assessment Form

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What Do I Do With My Score?

The FAASTeam FRAT, like many other FRATs, produces a score that will fall within one of three risk categories: Green (low), yellow (medium), and red (high).



Green: Go fly!

With a clear in-the-green score, you might be tempted to blast off with unabated zeal. Not so fast. A FRAT is not meant to make your go/no-go decision for you. It is merely a tool to help you plan your flight and think through a more complete range of hazards and risks. When using a FRAT, it's a good idea to create numerical thresholds that trigger additional levels of scrutiny prior to a go/no-go decision for the flight. For example, a score that's on the high end of the green scale may still warrant further analysis. The pilot should discuss what the highest scoring risks are and attempt to mitigate those risks.



Yellow: Try to mitigate some of the higher scoring items.

If your score falls in the yellow, try to mitigate some of the higher scoring items. That might entail waiting for the weather to improve or switching to an aircraft you have more experience with. If the score is still in the yellow, bring in the opinion of a designated "contact" person such as a flight instructor or an FAASTeam Representative. They may be able to help think of ways to further mitigate some of the risks for your flight.



Red: No-Go.

If your score falls in the red zone, you should seriously consider cancelling the flight unless the risks involved can be safely mitigated. It's important to not allow the external pressures involved with carrying on with the flight (e.g., attending your son's graduation ceremony) interfere with your go/no-go decision. You (and

your passengers) may be disappointed, but it's always better to be wishing you were in the air than wishing you were on the ground!

FAAST FRAT

No FRAT can anticipate all the hazards that may impact a particular flight but there are some common hazards that GA pilots encounter regularly. The FAASTeam's easy-to-use and GA-focused FRAT can get you started in effective safety risk management. The FRAT is currently available as an automated spread sheet that will run on MS Windows or Apple computer operating systems, but a new smartphone app version is in the works and should be released later in 2017.

Learn More

FAA InFO 07015 — Flight Risk Assessment Tool
<http://bit.ly/2hkKTOM>

FAA Advisory Circular, AC 120-92A, SMS for Aviation Service Providers
<http://bit.ly/2gc1p2x>

Risk Management Handbook (FAA-H-8083-2) Chapter 4-2
<http://go.usa.gov/iAJk>

"You Can Take it With You," FAA Safety Briefing, July/August 2012, page 4
<http://go.usa.gov/iAuV>

