

General Aviation

Title: How Pilots Use Weather Information

Description of Requirement:

Weather is the single largest cause of aviation fatalities, especially in general aviation (GA). As part of a multi-pronged effort to understand why pilots continue to experience weather-related accidents and incidents, this requirement seeks to develop baseline information on how “typical” GA pilots acquire, evaluate, and use weather information. This proposed requirement addresses the agency’s goal of reducing GA fatalities. It also supports interventions recommended by the GA Joint Steering Committee (GA-JSC), a government-industry group that oversees and tracks accident reduction efforts.

Background:

Most weather-related GA accidents are fatal. Although available weather information for pilots continues to improve, analysis shows that fewer than half of the pilots involved in fatal weather accidents ever received a formal (i.e., officially approved and recorded) pre-flight weather briefing. There is, however, anecdotal evidence that many pilots do use one or more of the many alternative sources of weather information (e.g., Internet weather products) for self-briefing. Consequently, one key to lowering the GA fatal accident rate requires understanding what sources the “typical” GA pilot consults before a flight, how the pilot evaluates that information, and how the pilot uses weather data in making operational decisions. These operational decisions include not only the initial go/no-go decision, but also the pilot’s en route decisions on continuing and/or diverting the flight.

Validity and reliability of information are paramount concerns to this project. Some data will be obtained through adding appropriate questions to the survey developed for the ASRS “Weather Callback” research project. In addition, pilot input will be provided by the Sponsor and other AFS employees, as well as through interviews with GA pilots, use of GA pilot focus groups, and over-the-shoulder observation. Statistical support is also critical, and will come from the Civil Aerospace Medical Institute (CAMI), AAM-500, Human Factors Branch.

Output:

The output of this project will be:

- A review of research literature on this topic.
- A comprehensive list of available weather data sources, plus the top

five sources that GA pilots claim to consult most frequently when making preflight and en route weather decisions. This list can include both “packaged” sources (e.g., standard telephone weather briefing by Flight Service) and specific products (e.g., pilot uses Internet to review selected METARs and TAFs).

- A narrative summary of how GA pilots evaluate (analyze) the information they obtain from these sources. For example, how much time do they generally spend looking at the weather when planning a GA flight? Do they give more weight to certain elements of a briefing, and/or to certain specific products (e.g., convective SIGMET)? Do pilots have a specific analytical and evaluative process (e.g., start with “big picture” and drill down, or start with departure forecast and work toward the big picture)? How many alternate destinations do they evaluate for weather? How much time do they spend considering these alternatives, relative to weather at the planned destination? Is the evaluative process specific to individuals, or are there common features in how GA pilots evaluate information?
- A narrative summary of how pilots use both the raw data and analysis (including FSS analysis as well as self-briefing analysis) to make decisions about the flight. For example, what, if any, elements of weather information (e.g., PIREP on icing) lead to an automatic “no go” decision? What kind of weather information might lead to a decision to divert or, alternatively, to continue the flight? This summary should explicitly include an analysis of pilots’ decision-making behavior and the extent to which “mission” goals influence weather analysis and decision-making.

To the extent that it is feasible to do so, the researcher should distinguish between the “ideal” and the “actual” (i.e., what pilots actually do) in each area.

Regulatory Link:

FAR Part 61, Part 91
Aeronautical Information Manual