# Stick & Rudder Skills
## The key to awareness, prevention, and recovery

What was once a maneuver-based flight training paradigm is now a scenario-based one. Yet inflight loss of control (LOC-I) remains atop the list of fatal accident categories. Number two on that list isn't even close. Nearly 80 percent of general aviation accidents have at least one skill-based error, with this type of error being the first human causal factor in the accident chain about half the time.[1] In contrast, about one-third of general aviation accidents include decision errors.[2]

### 1900
"It is possible to fly without motors, but not without knowledge and skill."
– *Wilbur Wright*

### 1918
"[The] object is to learn to fly as if to the instinct born so that one may give practically all one's attention to other things than merely flying the machine…"
– *H. Barber*

Aerobatics

### 1944
"Almost all fatal flying accidents are caused by loss of control during a turn!"
– *Wolfgang Langewiesche*

Stick and Rudder
*Explanation of the Art of Fly*

### 1957
"the underlying purpose of flight training must be to develop skills and safe habits that are transferrable to any aircraft."
– *Major Harley E. Barnhart* (edited by Van Sickle)

MODERN AIRMANSHIP

### 1980
"fundamentals must be mastered before more advanced phases can be learned." – *AC 61-21A*

Flight Training Handbook

### 1999
"The retention of pilot flight skills is a critical factor in the overall safety and efficiency of general aviation operations."
– *Dr. David Hunter*

A Guide for the Conduct of Biennial Flight Reviews

### 2008
"the ability to instinctively perform certain maneuvers or tasks that require manual dexterity and precision.… allows the pilot more time to concentrate on other essential duties…" – *FAA-H-8083-9A*

Aviation Instructor's Handbook

### 2009
As long as pilots are an active part of the system, "Error control will never be engineered out of existence with technology." – *Tony Kern*

BLUE THREAT
WHY TO ERR IS INHUMAN

### 2012
"Failure to focus on stick-and-rudder skills…often reveals itself in the same way a geologic fault does when it comes under excessive stress: something breaks." – *Rod Machado*

LICENSE TO LEARN
IN DEFENSE OF STICK-AND-RUDDER
AOPA PILOT    By Rod Machado

### 2013
The FAA "believes maintaining and improving the knowledge and skills for manual flight operations is necessary for safe flight operations." – *SAFO 13002*

SAFO
Safety Alert for Operators

### 2021
"To master any subject, one should first master the fundamentals." – *FAA-H-8083-3C*

Airplane Flying Handbook

### 2022
"Manual flight is the foundation upon which other technical flying skills are built."
– *AC 120-123*

U.S. Department of Transportation
Federal Aviation Administration
Subject: Flightpath Management

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Several FAA publications provide stall and upset recovery templates. The first action listed? Disconnect the automation. The remaining steps are manual control actions. In other words, your stick and rudder skills will be the last line of defense against LOC-I. Since these skills are perishable, they need to be practiced and critiqued regularly.
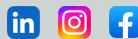
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with Master Instructor Rich Stowell

1. Douglas Wiegmann, Troy Faaborg, Albert Boquet, et al., *Human Error and General Aviation Accidents: A Comprehensive, Fine-Grained Analysis Using HFACS*, DOT/FAA/AM-05/24, December 2005, 13.
2. Ibid., 14.