



U.S. Department
of Transportation

**Federal Aviation
Administration**

Office of the Administrator

800 Independence Ave., S.W.
Washington, DC 20591

January 13, 2021

The Honorable Roger Wicker
Chairman, Committee on
Commerce, Science, and Transportation
United States Senate
Washington, DC 20510

Dear Mr. Chairman:

Enclosed is the Federal Aviation Administration's (FAA) report to Congress on the progress in meeting the requirements of Section 308 of the FAA Reauthorization Act of 2018 (Pub. L. 115-254).

Section 308 directed the FAA, in coordination with the Chairman of the National Transportation Safety Board, to initiate a study of general aviation safety. The findings outlined in this report include general aviation safety data from January 1, 2000, to December 31, 2018.

We look forward to continued collaboration with your staff and are happy to schedule time to brief you further, if desired.

We have sent identical letters to Chairman DeFazio, Ranking Member Cantwell, and Ranking Member Graves.

Sincerely,

A handwritten signature in black ink that reads "Steve Dickson". The signature is fluid and cursive, with the first name "Steve" and last name "Dickson" clearly legible.

Steve Dickson
Administrator

Enclosure



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800 Independence Ave., S.W.
Washington, DC 20591

January 13, 2021

The Honorable Peter A. DeFazio
Chairman, Committee on
Transportation and Infrastructure
House of Representatives
Washington, DC 20515

Dear Mr. Chairman:

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800 Independence Ave., S.W.
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January 13, 2021

The Honorable Maria Cantwell
Committee on
Commerce, Science, and Transportation
United States Senate
Washington, DC 20510

Dear Ranking Member Cantwell:

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Steve Dickson
Administrator

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**Federal Aviation
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Office of the Administrator

800 Independence Ave., S.W.
Washington, DC 20591

January 13, 2021

The Honorable Sam Graves
Committee on
Transportation and Infrastructure
House of Representatives
Washington, DC 20515

Dear Ranking Member Graves:

Enclosed is the Federal Aviation Administration's (FAA) report to Congress on the progress in meeting the requirements of Section 308 of the FAA Reauthorization Act of 2018 (Pub. L. 115-254).

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Steve Dickson
Administrator

Enclosure



FAA
Aviation Safety

REPORT TO CONGRESS:

Federal Aviation Administration and National Transportation Safety Board Review of General Aviation Safety

FAA Reauthorization Act of 2018 (Pub. L. No. 115-254) – Section 308

EXECUTIVE SUMMARY

The Federal Aviation Administration (FAA) submits this report in response to Section 308 of the FAA Reauthorization Act of 2018 (Pub. L. 115-254), which requires the FAA, in coordination with the Chairman of the National Transportation Safety Board (NTSB), to conduct a study of general aviation safety and make such recommendations as the FAA considers necessary to address general aviation safety. This report describes the FAA and the NTSB activities in response to this directive. The findings outlined in this report include general aviation safety data from January 1, 2000 to December 31, 2018, including:

- Number of general aviation accidents
- Number of injuries and fatalities
- Number of accidents investigated by the NTSB and the FAA
- Findings and probable causes of general aviation accidents

The FAA continuously reviews every open NTSB Safety Recommendation, including those safety recommendations involving general aviation, to determine the FAA's response.

This report also includes an assessment of the most common general aviation safety issues, as well as the total costs to the Federal Government to conduct investigations for general aviation accidents over the last ten years.

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INTRODUCTION

The FAA submits this report in response to Section 308 of the FAA Reauthorization Act of 2018 (Pub. L. 115-254), which requires the FAA to submit to the appropriate committees of Congress a report on the results of the study of general aviation safety and provide such recommendations as the FAA considers necessary, developed in coordination with the Chairman of the NTSB. In this report, the term “general aviation” is used to describe aircraft operation for personal, recreational, or other noncommercial purposes.

RESPONSE TO SECTION 308 REQUIREMENTS

The following subsections address the requirements specified under Section 308 of the FAA Reauthorization Act of 2018 (Pub. L. 115-254).

Summary of the FAA and the NTSB Activities

In response to Section 308 of the FAA Reauthorization Act of 2018, the FAA’s Office of Accident Investigation and Prevention (AVP) and the NTSB held a kick-off meeting on October 31, 2018 to begin the joint review of general aviation safety. AVP and NTSB subject experts held four in-person meetings between November 2018 and March 2020. Additionally, the review of data and safety analysis within each organization continued during this time to support the mandate directed by Congress. The areas discussed during these FAA/NTSB meetings included the following topics, among others:

- Number of general aviation accidents
- Number of injuries and fatalities
- Number of accidents investigated by the NTSB and the FAA
- Findings and probable causes of general aviation accidents

The findings of the FAA and the NTSB joint review of general aviation safety are detailed in the subsections below.

Review of General Aviation Accidents

The FAA and the NTSB conducted a review of all general aviation accidents from January 1, 2000, to December 31, 2018. This review showed there were 18,481 general

aviation accidents that involved 18,613 aircraft. The number of injuries, including with respect to both occupants of aircraft and individuals on the ground, as a result of such accidents are broken down in table 1.

In determining the highest injury severity, every person involved in the accident is considered. If there are one or more fatal injuries, the injury severity of the accident is considered fatal. If there are one or more serious injuries but no fatal injuries, the injury severity of the accident is considered serious. If there are one or more minor injuries but no fatal or serious injuries, the injury severity of the accident is considered minor. If there are no fatal, serious, or minor injuries, the injury severity of the accident is considered none.

TABLE 1: ACCIDENTS BY HIGHEST INJURY CATEGORY 2000-2018

	FATAL	SERIOUS	MINOR	NONE
TOTAL ACCIDENTS	3,647	2,136	2,892	9,795
TOTAL INJURIES	6,199	3,271	4,913	17,938
GROUND INJURIES	37	53	75	

The FAA and the NTSB conduct joint investigations on all accidents. Findings from accident investigations also assist the FAA with carrying out our responsibility to ensure continuous operational safety in the National Airspace System.

Common Probable Cause of General Aviation Accidents

Based on an assessment of the most common probable cause determinations issued for general aviation accidents since 2000, the five most common accident occurrences for all general aviation accidents can be seen on table 2.

TABLE 2: MOST COMMON ACCIDENT OCCURRENCES FOR GENERAL AVIATION ACCIDENTS

#	TYPE
1	Loss of Control in Flight
2	System Component Failure – (Powerplant);
3	Loss of Control on Ground

4	Abnormal Runway Contact (i.e., hard landings)
5	Fuel-related accidents

Combined, these occurrences account for approximately 72 percent of all general aviation accidents.

Furthermore, table 3 shows the five most common accident occurrences for fatal general aviation accidents.

TABLE 3: MOST COMMON ACCIDENT OCCURRENCES FOR FATAL GENERAL AVIATION ACCIDENTS

#	TYPE
1	Loss of Control in Flight
2	System Component Failure – (Powerplant)
3	Controlled Flight into Terrain or Object
4	Unintended Flight in Instrument Meteorological Conditions
5	System Component Failure – (Non-Powerplant)

Combined, these occurrences account for approximately 75 percent of all fatal general accidents.

Common Facts Analyzed in General Aviation Accident Investigations

The NTSB determines the probable cause for all accidents the agency investigates. In addition to producing a written statement of probable cause in its accident reports, the NTSB uses a coding system¹ to characterize causal findings in its database of aviation accidents for the purpose of aggregate analyses. Because most accidents result from a combination of multiple causal and contributing factors, the percentage of accidents resulting from a particular issue will sum to more than the total number of accidents, and when represented as percentages will sum to more than 100 percent.

In the NTSB coding system, the causes and findings can be summarized into broad categories of safety issue areas associated with the aircraft, personnel, environment,

¹ The NTSB Aviation Accident Database & Synopses can be found on the NTSB website: <https://www.nts.gov/layouts/nts.aviation/index.aspx>

and organizational factors.² Using this categorization, table 4 shows the five issue areas most frequently cited as a causal or contributing factor for all general aviation accidents.

TABLE 4: MOST COMMON FACTORS FOR GENERAL AVIATION ACCIDENTS

TYPE	%
Personnel Task Performance	57
Aircraft Operation and Performance	53
Personnel Actions and Decisions	29
Use of Aircraft Systems	12
Environmental Issues Related to Weather Conditions	12

When limited to only fatal accidents, the distribution changes slightly. These changes are shown on table 5.

TABLE 5: MOST COMMON FACTORS FOR FATAL GENERAL AVIATION ACCIDENTS

TYPE	%
Aircraft Operation and Performance	60
Personnel Task Performance	58
Personnel Actions and Decisions	40
Personnel Psychological Issues Related to Decision-Making or Judgment	18
Environmental Issues Related to Weather Conditions	18

When taking all factors into consideration, the most common type analyzed by the FAA and the NTSB in the course of investigations of general aviation accidents since 2000 are issues that involve the pilot’s control of the aircraft, and actions or decisions—particularly related to weather.

Additionally, in coordination with the NTSB, the FAA collects and analyzes a variety of unique facts for each accident, covering such areas as history of flight, injuries,

² The NTSB determines the findings of an accident using a hierarchy of information. The top level is referred to as a finding category. In addition to the finding categories listed in the paragraph, there are finding subcategories for each of the finding categories. For personnel issues, it can be any person the NTSB believes contributed to the event (i.e., pilot, maintenance personnel, or flight crew). The personnel finding subcategories can include physical, experience/knowledge, miscellaneous, psychological, action/decision, and task performance.

aircraft/property damage, personnel, aircraft, weather, aids to navigation, communications, airport information, flight recorders, wreckage and impact information, medical and pathological information, survival aspects, and organizational and management information, among others. These unique facts for each accident were taken into account in the FAA and the NTSB's review to address the requirements under Section 308.

Review of NTSB Safety Recommendations for General Aviation Accidents

The FAA reviews every open NTSB Safety Recommendation on an annual basis to determine the FAA response, including those involving general aviation. The FAA review of the NTSB recommendations includes determining: 1) no change to FAA policy, 2) new FAA actions, or 3) the progress of previously discussed actions. While the NTSB and FAA work collaboratively toward enhancing aviation safety, the NTSB is free to recommend any measure possible for enhancement, while the FAA is bound by regulatory procedure to determine what is plausible under current authorities. Therefore, there will be some recommendations made by the NTSB that will have to be closed as unacceptable actions that the FAA is prohibited from performing. For recommendations that include FAA rulemaking, the FAA must follow the Administrative Procedure Act, Office of Management and Budget guidance, and related executive orders, such as Executive Order 13771, Reducing Regulation and Controlling Regulatory Cost. Where the FAA determines not to promulgate all or part of a rulemaking to meet a recommendation, the FAA may look to publish guidance, such as an advisory circular, special airworthiness information bulletin, safety alert for operators, information for operators, or Technical Standard Order to meet the intent of the recommendation.³

Status of NTSB Safety Recommendations for General Aviation Accidents

Since 2000, the NTSB has issued 294 safety recommendations addressing issues related to non-commercial general aviation operations. The following table shows the resolution status of the recommendations as of September 2019. Of the 294

³ NTSB's Safety Recommendations Database contains information on recommendations, their current status, and correspondence with the recommendation request: <https://www.nts.gov/safety/safety-recs/layouts/ntsb.recsearch/RecTabs.aspx>

recommendations, 231 have been closed, while 63 recommendations remain open, and are in the process of being addressed.

TABLE 6: NTSB SAFETY RECOMMENDATIONS ISSUED AND STATUS⁴

STATUS	COUNT
Closed—Acceptable Action	125
Closed—Acceptable Alternate Action	24
Closed—Exceeds Recommended Action	5
Closed—Reconsidered	12
Closed—Superseded	1
Closed—Unacceptable Action	62
Closed—Unacceptable Action/Superseded	2
Open—Acceptable Alternate Response	5
Open—Acceptable Response	52
Open—Await Response	2
Open—Unacceptable Response	4
Grand Total	294

Common General Aviation Safety Issues

For each of its aviation investigations, the NTSB generates a summary of the key occurrences in an accident event timeline. The accident event timeline is the best method to summarize the factual findings of the NTSB investigations. To represent that timeline, the NTSB uses a standardized coding structure developed by the International Civil Aviation Organization (ICAO) and the Commercial Aviation Safety Team (CAST), called the CAST/ICAO Common Taxonomy Team (CICITT) codes. The NTSB records the coded event timeline in its database of aviation accidents and selects one occurrence category from the accident timeline that best characterizes the accident type.

⁴ NTSB safety recommendations and status definitions can be found on the NTSB site: <https://www.nts.gov/safety/safety-recs/Pages/Status-Explanation.aspx>

Table 7 lists the 10 most common defining events in general aviation fatal accidents. The event types are listed by CICTT codes and a standardized description of the event type.

TABLE 7: MOST COMMON DEFINING EVENTS (CICTT CODES)⁵

CICTT CODE	EVENT TYPE
LOC-I	Loss of aircraft control while, or deviation from intended flightpath, in flight.
SCF-PP	Failure or malfunction of an aircraft system or component related to the powerplant.
CFIT	Inflight collision or near collision with terrain, water or obstacle without indication of loss of control.
UIMC	Unintended flight in Instrument Meteorological Conditions (IMC).
SCF-NP	Failure or malfunction of an aircraft system or component other than the powerplant.
MAC	An air proximity or Terrain Collision Alert System (TCAS) alert, a loss of separation or near midair collision, or a midair collision.
FUEL	One or more powerplants experienced reduced or no power output due to fuel exhaustion, fuel starvation/mismanagement, fuel contamination/wrong fuel, or carburetor and/or induction icing.
LALT	Collision or near collision with obstacles/objects/terrain while intentionally operating near the surface (excludes takeoff or landing phases).
CTOL	Collision with obstacles(s) during take-off or landing whilst airborne.
AMAN	The intentional abrupt maneuvering of the aircraft by the flight crew.
ARC	Any landing or takeoff involving abnormal runway or landing surface contact.

⁵ CICTT occurrence categories for aviation accidents and incidents:
http://www.intlaviationstandards.org/apex/f?p=240:3:9912025479147::NO::P3_X:OC

Costs of Conducting Investigations of General Aviation Accidents

In coordination with the NTSB, the FAA has calculated that the cost for the Federal Government to conduct investigations of general aviation accidents from 2009 to 2018 was approximately \$285,184,000. This cost is based on a weighted average of approximately \$32,000 for the 8,912 accident investigations and by reviewing identified the FAA and the NTSB staff labor distribution codes associated with accident investigations.

Working with General Aviation Community for Increased Safety

The GAJSC is a public-private partnership working to improve general aviation safety by developing safety enhancements to mitigate risk. The partnership is comprised of representatives of the FAA, the NTSB, and industry. The GAJSC uses a data-driven, consensus-based approach to analyze aviation safety data and develop risk reduction efforts.

The GAJSC analyzes general aviation safety data to develop intervention strategies to prevent or mitigate problems associated with accident causes, called safety enhancements. Safety enhancements include procedures, training, and equipment installations that, when implemented, may reduce the likelihood of accidents in the future.

- The GAJSC is *currently* working on safety enhancements in areas that include weather technology, flight data monitoring, safety culture, direct tension indicators, survivability, and power plant system component failure.
- The GAJSC has *completed* work on safety enhancements in areas that include aeronautical decision making, over-reliance on automation, flight training after period of flight inactivity, engine monitoring technology, flight after use of medications with sedating effects, and pilot response to unexpected events.

CONCLUSION

This report provides the results of the FAA and the NTSB review of general aviation safety that was conducted pursuant to Section 308 of the FAA Reauthorization Act of 2018. The joint review affirmed that the FAA and the NTSB A have robust processes and a strong working relationship to conduct joint investigations on all aviation accidents and carefully review all available general aviation safety data. Additionally, both

agencies collaborate on an ongoing basis with general aviation industry stakeholders on data analysis and safety enhancements through the GAJSC. Since the FAA and the NTSB's work on general aviation safety is continuous, and the FAA reviews all open NTSB recommendations on an annual basis, the Section 308 review of general aviation safety did not generate any new specific recommendations beyond those previously identified. The FAA remains committed to working with the NTSB, industry, and aviators to find the best solutions to the identified safety issues, and continuously improve safety of flight for all operators.