

Enhance Safety of  
Revenue Passenger-Carrying Operations  
Conducted Under  
Title 14 *Code of Federal Regulations* Part 91



**Accident Report**

NTSB/AAR-21/03  
PB2021-100910



**National  
Transportation  
Safety Board**

NTSB/AAR-21/03  
PB2021-100910  
Notation 66508  
Adopted March 23, 2021

# Aviation Investigation Report

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Enhance Safety of  
Revenue Passenger-Carrying Operations  
Conducted Under  
Title 14 *Code of Federal Regulations* Part 91



**National  
Transportation  
Safety Board**

490 L'Enfant Plaza, S.W.  
Washington, D.C. 20594

**National Transportation Safety Board. 2021. *Enhance Safety of Revenue Passenger-Carrying Operations Conducted Under Title 14 Code of Federal Regulations Part 91*. Aviation Investigation Report NTSB/AAR-21/03. Washington, DC: NTSB**

**Abstract:** This report discusses the safety of revenue passenger-carrying operations conducted under Title 14 *Code of Federal Regulations (CFR)* Part 91. These operations, which carry thousands of passengers for compensation or hire each year, are not held to the same maintenance, airworthiness, and operational standards as air carrier, commuter and on demand, and air tour operations conducted under 14 *CFR* Parts 121, 135, and 136, respectively. This investigation focuses on the following categories of revenue passenger-carrying operations conducted under Part 91: exception from 14 *CFR* Part 119, exemption from certain Part 91 and 119 requirements, omission from Part 119 and other commercial regulations, and exploitation of Part 119 regulatory loopholes. Members of the public who pay to participate in Part 91 revenue passenger-carrying activities are likely unaware that these operations have less stringent requirements than other commercial aviation operations. As a result of this investigation, the National Transportation Safety Board makes six new safety recommendations to the Federal Aviation Administration.

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## Abbreviations

<b>A&amp;P</b>	airframe and powerplant
<b>AC</b>	advisory circular
<b>AD</b>	airworthiness directive
<b>CAA of NZ</b>	Civil Aviation Authority of New Zealand
<b>CEO</b>	chief executive officer
<b>CFR</b>	<i>Code of Federal Regulations</i>
<b>CG</b>	center of gravity
<b>FAA</b>	Federal Aviation Administration
<b>FSDO</b>	flight standards district office
<b>LHFE</b>	living history flight experience
<b>LOA</b>	letter of authorization
<b>NPRM</b>	notice of proposed rulemaking
<b>NTSB</b>	National Transportation Safety Board
<b>OPC</b>	Oahu Parachute Center
<b>POI</b>	principal operations inspector
<b>SMS</b>	safety management system
<b>SMSVP</b>	Safety Management System Voluntary Program

## Executive Summary

The National Transportation Safety Board (NTSB) has a long history of concerns about the safety of various revenue passenger-carrying operations conducted under Title 14 *Code of Federal Regulations (CFR)* Part 91. These operations, which carry thousands of passengers for compensation or hire each year, are not held to the same maintenance, airworthiness, and operational standards as air carrier, commuter and on-demand, and air tour operations conducted under 14 *CFR* Parts 121, 135, and 136, respectively.

Some commercial operations that carry passengers for compensation or hire are excepted from 14 *CFR* Part 119, Certification: Air Carriers and Commercial Operators, which provides the requirements that an operator must meet to obtain and hold a certificate authorizing operations under Parts 121 or 135. As indicated in 14 *CFR* 119.1(e), these excepted operations include certain nonstop commercial air tour flights, sightseeing flights conducted in hot air balloons, and nonstop intentional parachute jump flights.

Operators providing living history flight experience sightseeing flights can be exempted from other Part 119 regulations and certain Part 91 regulations. These revenue passenger-carrying flights are conducted aboard historically significant aircraft that were formerly operated in US military service.

Glider sightseeing flights are conducted under Part 91 because they are omitted from Parts 121 and 135 and are not covered by Part 136 commercial air tour rules. According to the Federal Aviation Administration (FAA), although glider sightseeing operations are not explicitly excepted from Part 119, “such operations would not need to be conducted under the authority of a part 119 certificate.”

In addition, some Part 91 revenue passenger-carrying operators have exploited specific 14 *CFR* 119.1(e) exceptions by carrying revenue passengers for purposes other than the exceptions intended, allowing them to avoid more stringent regulatory requirements. For example, some operators carry passengers under the premise of student instruction or training flights, which are excepted from the requirements of 14 *CFR* 119.1(e). Although these operators might provide some flight training, most of their operations involve flights with another intended purpose, such as air combat/extreme aerobatic experience flights and tour flights.

Members of the public who pay to participate in Part 91 revenue passenger-carrying activities are likely unaware that these operations have less stringent requirements than other commercial aviation operations. Although the types of Part 91 revenue passenger-carrying operations are diverse, the need for greater safety requirements and more comprehensive oversight applies to all of these operations.



## Safety Issues

The NTSB evaluated the following safety issues:<sup>1</sup>

- **Need for an appropriate framework for Part 91 revenue passenger-carrying operations.** The operating rules for Part 91 general aviation, which includes revenue passenger-carrying operations, do not require operating certificates, operations specifications, and FAA-approved training and maintenance programs, all of which are required for Part 135 operations. In January 2020, the NTSB recommended that all air tour operations with powered airplanes and rotorcraft be covered by Part 135 regulations so that those commercial air tour operations currently conducted under Part 91 would be subject to the same safety requirements as Part 135 commercial air tour operations.<sup>2</sup> The NTSB recognizes that Part 135 regulatory requirements might not be practical or feasible for other types of revenue passenger-carrying operations currently conducted under Part 91, but a more robust regulatory framework is needed for these operations to increase the level of public safety. The NTSB's investigations of multiple accidents presented in this report found that, under the current regulatory framework for revenue passenger-carrying operations, a lack of structured pilot training, deficiencies in pilot skills and decision-making, and inadequate aircraft maintenance were occurring.
- **Need to identify regulatory loopholes and omissions and address them in the new framework.** Two of the accidents presented in this report involved revenue passenger-carrying flights that were operating under the premise of student instruction; however, the investigations of those accidents found that the revenue passengers aboard those flights were carried for other purposes (a tour flight and an air combat/extreme aerobatic experience flight). Also, both investigations determined that, although the FAA was aware of operators that were conducting flights under the guise of flight instruction, the FAA's local inspectors did not have the means for providing the necessary oversight for these operations because of limitations in the regulatory framework for such operations. As a result, these operators were able to avoid oversight and circumvent certain regulatory requirements. Another example of an operator circumventing certain regulatory requirements is the accident discussed in this report involving a nonstop commercial air tour flight operating as an aerial photography flight.

One of the accidents presented in this report involves a commercial glider sightseeing

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<sup>1</sup> The safety issues associated with Part 91 revenue passenger-carrying operations were based on the findings from eight fatal NTSB accident investigations between 2010 and 2019.

<sup>2</sup> Nonstop commercial air tour flights that are excepted from Part 119 must begin and end at the same airport and be conducted within a 25-statute mile radius of that airport. The Part 119 exception also requires air tour operators to have a letter of authorization (LOA) in accordance with 14 *CFR* 91.147, which addresses air tour passenger-carrying flights for compensation or hire. According to paragraph (c) of the regulation, the LOA must include basic information regarding how the operator conducts its business. Because the regulation does not require FAA oversight of pilots, aircraft, and operations, which is required for Part 135 commercial air tour flights, the LOAs for Part 91 commercial air tour operations are insufficient for ensuring local air tour safety.

flight. Such flights have been omitted from specific FAA regulations. As a result, these flights have essentially been operating with almost no oversight.

- **Need for increased FAA oversight.** Part 91 revenue passenger-carrying operators are not subject to the same level of FAA oversight and surveillance as Part 135 operators. The findings from most of the accidents presented in this report demonstrated that the level of FAA oversight for Part 91 revenue passenger-carrying operations is insufficient to identify and correct safety deficiencies that could expose passengers to unacceptable safety risks. For two of the accident investigations, the NTSB found that the FAA needed to provide its inspectors with sufficient guidance to pursue more comprehensive oversight of Part 91 revenue passenger-carrying operators. Such guidance and oversight could help ensure that these operators are properly maintaining their aircraft and safely conducting operations.

The FAA currently maintains a database with basic information about each Part 91 air tour operator.<sup>3</sup> It is important for the FAA to also have this information for other Part 91 revenue passenger-carrying operators. A national database of these operators could allow the FAA to track each operator and ensure the safety of the passengers who pay for the services that the operator offers.

- **Need for safety management systems (SMS).** The NTSB’s investigations of three of the accidents presented in this report found that organizational safety management failures played a role in those accidents. An effective means for managing and mitigating risks in an aviation operation is through the use of an SMS, which the FAA has described as a “formal, top down business-like approach to managing safety risk.” Only Part 121 air carriers are currently required to incorporate SMS, but the FAA has encouraged the voluntary implementation of SMS beyond Part 121 operations.<sup>4</sup> In January 2020, the NTSB recommended that the FAA require all commercial air tour operators, regardless of their operating rule, to implement an SMS. Other Part 91 revenue passenger-carrying operators could also benefit from an SMS to ensure that operational risks are sufficiently mitigated; SMS was designed to be scalable so that operators could integrate safety management practices tailored to their specific operation.

One accident investigation presented in this report found that, although the Part 91 operator had implemented an SMS, the FAA did not provide oversight of this SMS. As a result, operational safety hazards went undetected. Oversight of SMS for passenger revenue-carrying operations currently conducted under Part 91 is critical for ensuring that mitigations are in place to trap safety hazards.

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<sup>3</sup> The FAA’s February 2007 final rule on national air tour safety standards indicated that, “through the LOA [letter of authorization database], we will now have geographic oversight of operations on which we previously did not have information” (NARA 2007).

<sup>4</sup> During fall 2020, the FAA indicated its intent to consider rulemaking that would require SMS for Part 91 and 135 operations.

## Findings

- The Federal Aviation Administration has a responsibility to bolster regulations and oversight for all revenue passenger-carrying operations currently conducted under Title 14 Code of Federal Regulations Part 91 to ensure an increased level of safety for those participants who pay for these flights.
- Some operators have been exploiting and/or inappropriately capitalizing on the exceptions contained in Title 14 Code of Federal Regulations 119.1(e) to avoid the additional requirements and oversight intended to apply to the types of revenue passenger-carrying operations being conducted.
- Because of a regulatory omission, commercial glider sightseeing flights have essentially been operating with almost no oversight.
- The Federal Aviation Administration's oversight and surveillance of Title 14 Code of Federal Regulations Part 91 revenue passenger-carrying operations do not ensure that these operators are properly maintaining their aircraft and safely conducting operations.
- The lack of a national database for revenue passenger-carrying operations currently conducted under Title 14 Code of Federal Regulations Part 91 precludes the Federal Aviation Administration from ensuring that its inspectors are overseeing all of these operators.
- The implementation of a safety management system for all revenue passenger-carrying operators currently operating under Title 14 Code of Federal Regulations Part 91 would help company managers, pilots, and other employees identify and mitigate risks and promote the safety of these operations.
- Federal Aviation Administration oversight of a revenue passenger-carrying operator's safety management system would help ensure that the system is adequately identifying and appropriately mitigating safety risks.

## Recommendations

### New Recommendations

#### To the Federal Aviation Administration

Develop national safety standards, or equivalent regulations, for revenue passenger-carrying operations that are currently conducted under Title 14 Code of Federal Regulations Part 91, including, but not limited to, sightseeing flights conducted in a hot air balloon, intentional parachute jump flights, and living history flight experience and other vintage aircraft flights. These standards, or equivalent regulations, should include, at a minimum for each operation type, requirements for

initial and recurrent training and maintenance and management policies and procedures. (A-21-9)

Identify shortcomings in Title 14 *Code of Federal Regulations* 119.1(e) that would allow revenue passenger-carrying operators to avoid stricter regulations and oversight in operations that include, but are not limited to, air combat/extreme aerobatic experience flights and tour flights operating as student instruction, nonstop commercial air tour flights operating as aerial photography flights, and glider sightseeing flights; after these shortcomings are identified, use that information to add other types of flight operations to the national safety standards, or equivalent regulations, requested in Safety Recommendation A-21-9. (A-21-10)

Revise FAA Order 8900.1, Flight Standards Information Management System, to include guidance for inspectors who oversee operations conducted under any of the living history flight experience exemptions to identify potential hazards and ensure that operators are appropriately managing the associated risks. (A-21-11)

Develop and continuously update a database that includes all of the revenue passenger-carrying operators addressed in Safety Recommendations A-21-9 and -10 to facilitate oversight of these operations. (A-21-12)

Require safety management systems for the revenue passenger-carrying operations addressed in Safety Recommendations A-21-9 and -10. (A-21-13)

For the revenue passenger-carrying operations addressed in Safety Recommendations A-21-9 and -10, provide ongoing oversight of each operator's safety management system once established. (A-21-14)

## **Previously Issued Recommendations Reiterated in This Report**

### **To the Federal Aviation Administration**

Require all commercial air tour operators, regardless of their operating rule, to implement a safety management system. (A-19-28)

Revise Order 8900.1, Flight Standards Information Management System, to include guidance for inspectors who oversee Title 14 *Code of Federal Regulations* (CFR) Part 91 operations conducted under any of the 14 CFR 119.1(e) exceptions to identify potential hazards and ensure that operators are appropriately managing the associated risks. (A-19-30)

## **Previously Issued Recommendations Reiterated and Classified in This Report**

### **To the Federal Aviation Administration**

Analyze your current policies, procedures, and tools for conducting oversight of commercial balloon operations in accordance with your Integrated Oversight

Philosophy, taking into account the findings of this accident; based on this analysis, develop and implement more effective ways to target oversight of the operators and operations that pose the most significant safety risks to the public. (A-17-45) Classified “Open—Unacceptable Response”

Develop and implement national standards within Title 14 *Code of Federal Regulations (CFR)* Part 135, or equivalent regulations, for all air tour operations with powered airplanes and rotorcraft to bring them under one set of standards with operations specifications, and eliminate the exception currently contained in 14 *CFR* 135.1. (A-19-31) Classified “Open—Unacceptable Response”

## Introduction

The National Transportation Safety Board (NTSB) has a long history of concerns about the safety of various revenue passenger-carrying operations conducted under Title 14 *Code of Federal Regulations* (CFR) Part 91. These operations carry thousands of passengers for compensation or hire each year but are not held to the same maintenance, airworthiness, and operational standards as commercial operations that are conducted under 14 CFR Parts 121, 135, and 136. These federal regulations address the following aviation operations:

- Part 91 addresses general aviation,
- Part 135 addresses commuter and on-demand operations,
- Part 136 addresses commercial air tours (and national parks air tour management), and
- Part 121 addresses air carrier operations.

Title 14 CFR Part 119 addresses the certification of air carriers and commercial operators and provides the requirements that an operator must meet to obtain and hold a certificate authorizing operations. As table 1 shows, an operating certificate is required for Part 121 air carriers' operations and Part 135 commercial operations, but revenue passenger-carrying operations conducted under Part 91 are not required to have an operating certificate. Table 1 also compares other regulatory requirements for Parts 91, 135, and 121.

**Table 1.** Requirements for operations under Parts 91, 135, and 121.

Requirement	Part 91 general aviation	Part 135 commuter and on demand	Part 121 air carrier
<b>Operating certificate</b>	<i>Not required</i>	Required	Required
<b>Part 119 management personnel</b>	<i>Not required</i>	Required	Required
<b>Director of safety</b>	<i>Not required</i>	<i>Not required</i>	Required
<b>Operations specifications</b>	<i>Not required</i>	Required	Required
<b>FAA-approved training program</b>	<i>Not required</i>	Required	Required
<b>FAA-approved maintenance program</b>	<i>Not required</i>	Required	Required
<b>Crew resource management training</b>	<i>Not required</i>	<i>Not required</i>	Required
<b>Flight and duty times/rest</b>	<i>Not required</i>	Required	Required
<b>Drug/alcohol program</b>	<i>Not required</i>	Required	Required
<b>Load manifest</b>	<i>Not required</i>	Required (multiengine)	Required
<b>Safety management system</b>	<i>Not required</i>	<i>Not required</i>	Required

Requirement	Part 91 general aviation	Part 135 commuter and on demand	Part 121 air carrier
<b>FAA oversight</b>	<i>Ramp inspection authority</i>	Assigned inspectors for routine and scheduled oversight of the operating certificate, operations specifications, training program, and maintenance program	Assigned inspectors for routine and scheduled oversight of the operating certificate, operations specifications, training program, and maintenance program

**Note:** The information for Part 91 does not include Part 91K fractional ownership operations or Part 91 air tour operations with a letter of authorization.

This investigation focuses on the following categories of revenue passenger-carrying operations conducted under Part 91:

- **Exception from Part 119.** As indicated in 14 *CFR* 119.1(e), these excepted operations include certain nonstop commercial air tour flights, sightseeing flights conducted in hot air balloons, and nonstop intentional parachute jump flights.<sup>5</sup> As a result of the exceptions, those commercial operations are conducted under the general flight rules of Part 91, which, based on the provisions of the regulation, provides minimal Federal Aviation Administration (FAA) oversight of operations and maintenance.
- **Exemption from certain Part 91 and 119 requirements.** Operators providing living history flight experience (LHFE) sightseeing flights can be exempted from other Part 119 regulations, including 14 *CFR* 119.5(g) and 119.21(a), and certain Part 91 regulations.<sup>6</sup> These revenue passenger-carrying flights are conducted aboard historically significant aircraft that were formerly operated in US military service. (Flights in vintage aircraft that were not operated in military service are currently considered to be nonstop commercial air tour flights.)
- **Omission from Part 119 and other commercial regulations.** Glider sightseeing flights are conducted under Part 91 because they are omitted from other regulations. Specifically, according to a February 8, 2013, FAA legal interpretation, glider operations are not conducted under Part 121 (which applies to airplanes) or Part 135 (which applies to airplanes and rotorcraft), and glider sightseeing operations are not covered by Part 136 commercial air tour rules (which apply to airplanes and helicopters) or 14 *CFR* 91.147 rules. The legal interpretation also stated, “an air tour conducted for compensation or hire in a glider may be conducted under the part 91 operating rules” and “although glider sightseeing rides are not explicitly excepted from part 119...such operations would not need to be conducted under the authority of a part 119 certificate.”

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<sup>5</sup> The excepted nonstop commercial air tour flights and the excepted nonstop intentional parachute jump flights must begin and end at the same airport and be conducted within a 25-statute mile radius of that airport. In addition, the nonstop commercial air tours exception [14 *CFR* 119.1(e)(2)] applies to operations involving an airplane or a helicopter with a passenger seat configuration of 30 seats or fewer and a payload capacity of 7,500 pounds or less; this exception also requires a letter of authorization in accordance with 14 *CFR* 91.147(c), which addresses air tour passenger-carrying flights for compensation or hire.

<sup>6</sup> According to the FAA, as of February 25, 2021, 20 operators held LHFE exemptions; these operators had a combined total of 87 aircraft that ranged in size from small single-engine to large four-engine aircraft.

- **Exploitation of Part 119 regulatory loopholes.** Some Part 91 revenue passenger-carrying operators have exploited specific 14 *CFR* 119.1(e) exceptions by carrying revenue passengers for purposes other than the exceptions intended, allowing them to sidestep more stringent regulatory requirements. For example, some operators carry passengers under the premise of student instruction or training flights, which are excepted from the requirements of 14 *CFR* 119.1(e).<sup>7</sup> Although these operators might provide some flight training, most of their operations involve flights with another intended purpose, such as air combat/extreme aerobatic experience flights and tour flights. By operating those flights as instructional flights, the operators can avoid additional FAA requirements and oversight that apply to other commercial operations.

Appendix A presents the Part 91 and 119 regulations pertaining to the information discussed above.

The NTSB has issued numerous safety recommendations to the FAA that highlighted the need for improved safety oversight for Part 91 revenue passenger-carrying operations. Most of those safety recommendations were subsequently classified “Closed—Unacceptable Action” because the FAA’s actions did not result in changes that would substantially improve the safety of these operations.<sup>8</sup>

This report presents the ongoing safety issues associated with Part 91 revenue passenger-carrying operations using eight fatal accidents that the NTSB investigated; table 2 lists those accident investigations, and section 1.2 provides background information about the accidents. The report does not address 14 *CFR* 119.1(e)-excepted operations involving (1) pilots who are the sole occupant/operator of an aircraft, (2) passengers who are integral to an aircraft operation (such as an aerial work operation) and should thus be aware of the potential risks associated with that operation, or (3) pilots who are receiving legitimate student instruction or flight training and should also be aware of potential operational risks.

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<sup>7</sup> In an August 3, 2017, legal interpretation to clarify the exceptions in 14 *CFR* 119.1(e), the FAA stated that it interpreted “student instruction” [14 *CFR* 119.1(e)(1)] broadly as “referring to an operation in which a person receives flight training from an authorized instructor for the purpose of obtaining a certificate, privilege, rating, or authorization under part 61.” The FAA also stated that it interpreted “training flights” [14 *CFR* 119.1(e)(3)] as “referring to operations in which a person receives training for the purpose of satisfying a training requirement outside of part 61.” The FAA explained that “flight crewmember training in special purpose operations, such as crop dusting, seeding, spraying, and banner towing, would fall under the ‘training flights’ exception.”

<sup>8</sup> Appendix C provides some of the NTSB’s previous recommendations in this area.



**Table 2.** Example accidents demonstrating ongoing safety issues associated with Part 91 revenue passenger-carrying operations.

Case no.	Location and date	Description	Number and type of injuries
<a href="#">WPR16FA072</a>	Honolulu, Hawaii, 2/18/16	Part 119-excepted activity—nonstop commercial air tour flight with a letter of authorization	1 fatal, 1 serious, 1 minor
<a href="#">DCA16MA204</a>	Lockhart, Texas, 7/30/16	Part 119-excepted activity—hot air balloon sightseeing flight	16 fatal
<a href="#">WPR19MA177</a>	Mokuleia, Hawaii, 6/21/19	Part 119-excepted activity—parachute jump flight	11 fatal
<a href="#">ERA20MA001</a>	Windsor Locks, Connecticut, 10/2/19	Part 91- and 119-exempted activity—LHFE sightseeing flight	7 fatal, 5 serious, 2 minor
<a href="#">ERA18FA238</a>	Morrisville, Vermont, 8/29/18	Part 119-omitted activity—glider sightseeing flight	3 fatal
<a href="#">WPR18FA013</a>	Four Corners, California, 10/21/17	Part 119-exploited activity—air combat/extreme aerobatic experience flight operating as student instruction	2 fatal
<a href="#">WPR11LA081</a>	Poipu, Hawaii, 12/22/10	Part 119-exploited activity—tour flight operating as student instruction	No injuries to the two occupants
<a href="#">ERA18MA099</a>	New York, New York, 3/11/18	Part 119-exploited activity—nonstop commercial air tour flight operating as an aerial photography flight	5 fatal, 1 minor

The NTSB is issuing six new safety recommendations and reiterating three recommendations to the FAA. These recommendations are intended to ensure a level of public safety that is commensurate with that provided for other commercial passenger-carrying operations.

# 1. Factual Information

## 1.1 Background

Members of the public who pay to participate in Part 91 revenue passenger-carrying activities are likely unaware that these operations have less stringent requirements than other commercial aviation operations. The FAA recognized the differences between Part 91 and Part 121 or 135 operations from the perspective of a passenger in the agency's notice of proposed rulemaking (NPRM) for fractional aircraft ownership (NARA 2001). The FAA stated that owners conducting operations under Part 91 operate their aircraft "only for themselves and their guests and may not offer transportation for hire to the general public unless they do so under part 135 or part 121." The FAA continued, "under these circumstances, the FAA has determined that the appropriate level of public safety is provided by imposing general operating and flight regulations and oversight under part 91."

The FAA further stated that aircraft owners flying aboard aircraft that they own or lease "exercise full control over and bear full responsibility for the airworthiness and operation of their aircraft." In contrast, the FAA stated that passengers who are transported under Parts 121 and 135 "exercise no control over and bear no responsibility for the airworthiness or operation of the aircraft aboard which they are flown."

In addition, the FAA's NPRM stated, "because the traveling public has no control over, or responsibility for...safety-of-flight issues, the FAA has determined that an appropriate level of public safety is provided by...very stringent regulations and oversight under part 121 and part 135." The FAA reiterated this position in a subsequent NPRM—for national air tour safety standards—by stating the following:

Based on available accident data, the FAA concludes that (1) there are significant differences in risks between sightseeing flights conducted under part 91 and air tour flights conducted under air carrier/commercial operator regulations, and (2) these risk differentials justify the proposal that the exception (from parts 119, 121, and 135 certification and operating requirements) for part 91 sightseeing operators be restricted. Regulatory action is also justified in view of the public expectation that all operators offering commercial air tours are regulated and surveilled to a level of safety higher than that applied to the general aviation operator (NARA 2003).

Despite this position, the FAA's final rule for national air tour safety standards allowed nonstop air tour operations that were conducted within a 25-statute mile radius of the departure airport and departed from and returned to the same airport to continue to operate under Part 91 with a letter of authorization (LOA) (NARA 2007).<sup>9</sup> However, even with an LOA, Part 91 air tour

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<sup>9</sup> The final rule stated that "operators under this section must apply for and receive a Letter of Authorization (LOA). This removes the burden of Operations Specifications...yet allows the FAA to build a database of part 91 compensation for hire operators conducting air tour operations." The final rule also stated that "LOAs are legal

operators are not subject to requirements and oversight similar to those for Part 135 air tour operators, such as limitations and risk mitigations that can be imposed through operations specifications and operations manuals.<sup>10</sup> Appendix D provides, for the period from 2000 to 2019, the accident rate, fatal accident rate, and number of accidents and flight hours for Part 91 and 135 air tour flights by year.<sup>11</sup>

## 1.2 Accidents Discussed in This Report

As stated in the introduction, this report presents eight NTSB accident investigations to demonstrate the ongoing safety issues associated with Part 91 revenue passenger-carrying operations. Sections 1.2.1 through 1.2.4 provide background information about each accident; sections 1.3.1 through 1.3.4 discuss the ongoing safety issues identified during the investigations.

### 1.2.1 Accidents Involving Part 119-Excepted Activities

#### Nonstop Commercial Air Tour Flight

On February 18, 2016, a Bell 206BIII helicopter was substantially damaged when it impacted water during a forced landing near Honolulu, Hawaii. One passenger sustained fatal injuries, the pilot and two passengers sustained serious injuries, and one passenger sustained minor injuries. The helicopter was operated by Genesis Helicopters as a Part 91 commercial air tour flight with a 14 *CFR* 91.147 LOA. The NTSB determined that the probable cause of this accident was the in-flight failure of the engine-to-transmission drive shaft due to improper maintenance, which resulted in low main rotor rpm and a subsequent hard landing on water.<sup>12</sup>

#### Hot Air Balloon Sightseeing Flight

On July 30, 2016, a Balóny Kubíček BB85Z hot air balloon struck power lines and crashed in a field near Lockhart, Texas. The pilot and 15 passengers sustained fatal injuries, and the balloon was destroyed by impact forces and a postcrash fire. The balloon was operated by Heart of Texas Hot Air Balloon Rides as a Part 91 sightseeing passenger flight. The NTSB determined that the probable cause of this accident was the pilot's pattern of poor decision-making that led to the initial launch, continued flight in fog and above clouds, and descent near or through clouds that decreased the pilot's ability to see and avoid obstacles. Contributing to the accident were (1) the pilot's

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documents required by rule to be in writing and under which the operator must provide certain information concerning how it conducts its business." Appendix A in this report describes the required LOA information.

<sup>10</sup> In addition, Part 135 requires pilot checkrides with FAA or FAA-approved check airmen, but 14 *CFR* 91.147 does not require operators to provide any pilot information on an LOA or perform checkrides; thus, the FAA has no record of the operator's pilots or their competency level.

<sup>11</sup> Accident rates for other Part 91 revenue passenger-carrying operations, such as parachute jump flights and LHFE flights, are not available because flight hour data for those operation types are not delineated from the overall Part 91 flight data.

<sup>12</sup> Postaccident examination of the helicopter revealed that the engine-to-transmission drive shaft had failed and separated at the transmission side, which resulted in the engine being unable to drive the rotor system. The examination also revealed that the failure was caused by overheating due to a lack of lubrication of the drive shaft coupling.

impairing medical conditions and medications and (2) the FAA's policy to not require a medical certificate for commercial balloon pilots.<sup>13</sup>

### **Parachute Jump Flight**

On June 21, 2019, a Beech King Air 65-A90 airplane, N256TA, impacted terrain after takeoff from Dillingham Airfield, Mokuleia, Hawaii. The pilot and 10 passengers were fatally injured, and the airplane was destroyed by impact forces and a postcrash fire. The airplane was owned by N80896 LLC and was operated by Oahu Parachute Center (OPC) LLC as a Part 91 local parachute jump flight.

The NTSB determined that the probable cause of this accident was the pilot's aggressive takeoff maneuver, which resulted in an accelerated stall and subsequent loss of control at an altitude that was too low for recovery.<sup>14</sup> Contributing to the accident were (1) the operation of the airplane near its aft center of gravity (CG) limit and the pilot's lack of training and experience with the handling qualities of the airplane in this flight regime; (2) the failure of OPC and its contract mechanic to maintain the airplane in an airworthy condition and to detect and repair the airplane's twisted left wing, which reduced the airplane's stall margin; and (3) the FAA's insufficient regulatory framework for overseeing parachute jump operations.<sup>15</sup>

### **1.2.2 Accident Involving Part 91- and 119-Exempted Activity**

On October 2, 2019, a Boeing B-17G was making a precautionary landing on runway 6 at Bradley International Airport, Windsor Locks, Connecticut, when it struck the approach lights, departed the right side of the runway, and collided with vehicles and a deicing fluid tank.<sup>16</sup> The commercial pilot, airline transport pilot, and five passengers sustained fatal injuries; the crew chief/flight engineer (referred to as the loadmaster) and four passengers sustained serious injuries; and one passenger and one person on the ground sustained minor injuries. The airplane was destroyed by impact forces and a postcrash fire. The airplane was operated by the Collings Foundation as a Part 91 local sightseeing flight.<sup>17</sup>

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<sup>13</sup> The FAA's exemption of balloon pilots from medical certification requirements eliminated the potential opportunity for an aviation medical examiner to identify the pilot's potentially impairing medical conditions and medications.

<sup>14</sup> The pilot's intentional aggressive takeoff maneuver involved a low-altitude, high-bank turn and simultaneous pitch-up maneuver.

<sup>15</sup> The NTSB also determined that contributing to the pilot's training deficiencies was the FAA's lack of awareness that the pilot's flight instructor was providing substandard training. The NTSB issued Safety Recommendations A-20-40 through -42 to address this issue, which is available by accessing the [NTSB's safety recommendation database](#).

<sup>16</sup> The accident airplane was on a tour that allowed members of the public to purchase an excursion on the vintage, former US military bomber airplane.

<sup>17</sup> The Collings Foundation had conducted LHFE flights under exemption No. 6540P since 1996. At the time of the accident, the FAA's most recent letter to the Collings Foundation that granted the exemption was dated March 22, 2018. In addition to 14 *CFR* 119.5(g) and 119.21(a), the Collings Foundation's operations were exempted from 14 *CFR* 91.9, Civil Aircraft Flight Manual, Marking, and Placard Requirements; 91.315, Limited Category Civil Aircraft: Operating Limitations; and 91.319(a), Aircraft Having Experimental Certificates: Operating Limitations.

The NTSB determined that the probable cause of this accident was the pilot's failure to properly manage the airplane's configuration and airspeed after he shut down the No. 4 engine following its partial loss of power during the initial climb.<sup>18</sup> Contributing to the accident was the pilot/maintenance director's inadequate maintenance while the airplane was on tour, which resulted in the partial loss of engine power to the Nos. 3 and 4 engines; the Collings Foundation's ineffective safety management system (SMS), which failed to identify and mitigate safety risks; and the FAA's inadequate oversight of the Collings Foundation's SMS.<sup>19</sup>

### **1.2.3 Accident Involving Part 119-Omitted Activity**

On August 29, 2018, a Schweizer SGS 2-32 glider, N17970, was substantially damaged when it impacted terrain near Morrisville, Vermont. The pilot and two passengers were fatally injured. The glider was operated by Stowe Soaring as a Part 91 local sightseeing flight. The NTSB determined that the probable cause of the accident was the pilot's exceedance of the glider's critical angle of attack while maneuvering, which resulted in an aerodynamic stall/spin and impact with terrain.<sup>20</sup> Contributing to the accident was the pilot's decision to operate the glider outside of its published weight limitations.

### **1.2.4 Accidents Involving Part 119-Exploited Activities**

#### **Air Combat/Extreme Aerobatic Experience Flight Operating as Student Instruction**

On October 21, 2017, an EXTRA Flugzeugproduktions-und Vertriebs-GmbH, EA 300/L collided with terrain near Four Corners, California. The pilot/flight instructor and passenger sustained fatal injuries, and the airplane was destroyed by impact forces and a postcrash fire. The airplane was operated by California Extreme Adventures LLC, doing business as Sky Combat Ace, as a Part 91 instructional flight.<sup>21</sup>

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<sup>18</sup> During the initial climb, the No. 4 engine began running roughly, and the pilot shut down the engine. One of the pilots then reported to air traffic control that the airplane needed to return to the airport because of a rough magneto. In addition, the No. 3 engine was producing less than maximum-rated power. Teardown examination of that engine revealed evidence of worn spark plugs and detonation. Detonation in a piston engine occurs when the fuel-air mixture in the cylinder detonates or explodes prematurely instead of being ignited by spark plugs and burning evenly and smoothly. Detonation can cause rough engine operation and a loss of power.

<sup>19</sup> (a) The pilot was responsible for performing the airplane's maintenance while the airplane was on tour. He held an airframe and powerplant certificate and was also the Collings Foundation's director of maintenance. (b) The Collings Foundation's SMS is discussed in section 1.3.4.

<sup>20</sup> The glider impacted terrain in a near-vertical, nose-down attitude, which was consistent with an aerodynamic stall/spin.

<sup>21</sup> The FAA generally does not allow Part 91 operators to advertise their services, but exceptions exist for flight training services. However, most of Sky Combat Ace's advertising and the information on its website were not related to traditional flight training. For example, the operator's website indicated that the company was an "extreme aviation attraction" that provided various aviation-related experiences, including aerobatics and simulated air combat during which passengers could fly the company's airplane. The accident flight was a 25-minute "Top Gun" experience that incorporated aerobatics, high-G maneuvers, and a low-level bombing run simulation.

The NTSB determined that the probable cause of this accident was collision with terrain after the pilot was unable to regain airplane control during an aerobatic maneuver.<sup>22</sup> Contributing to the accident was the operator's failure to provide effective internal oversight to identify and prohibit exceedance of the airplane's performance parameters and the lack of regulatory framework available to oversee and regulate such flight operations.

### **Tour Flight Operating as Student Instruction**

On December 22, 2010, a special light sport Apollo Delta Jet AS-III weight-shift control aircraft (commonly referred to as a trike) was involved in an accident near Poipu, Hawaii, during a precautionary off-airport landing.<sup>23</sup> The pilot and passenger were not injured, and the aircraft was substantially damaged. The flight was operated by Big Sky Kauai as a Part 91 instructional flight.<sup>24</sup> The NTSB determined that the probable cause of this accident was the pilot's lack of compliance with the manufacturer's guidance for the care and handling of the aircraft along with incomplete preflight inspections, which resulted in an undetected material failure of the nose cone.

### **Nonstop Commercial Air Tour Flight Operating as Aerial Photography Flight**

On March 11, 2018, an Airbus Helicopters AS350 B2 lost engine power during cruise flight, and the pilot performed an autorotative descent and ditching on the East River in New York, New York. The five passengers were fatally injured, the pilot sustained minor injuries, and the helicopter was substantially damaged. The FlyNYON-branded flight was operated by Liberty Helicopters Inc. per a contractual agreement with NYONair; both companies considered the flight to be a Part 91 aerial photography flight.<sup>25</sup>

The NTSB determined that the probable cause of this accident was Liberty Helicopters' use of a NYONair-provided passenger harness/tether system, which caught on and activated the floor-mounted engine fuel shutoff lever and resulted in the in-flight loss of engine power and the subsequent ditching. Contributing to the accident were (1) Liberty's and NYONair's deficient safety management, which did not adequately mitigate foreseeable risks associated with the harness/tether system interfering with the floor-mounted controls and hindering passenger egress; (2) Liberty allowing NYONair to influence the operational control of Liberty's FlyNYON flights; and (3) the FAA's inadequate oversight of Part 91 revenue passenger-carrying operations. Contributing to the severity of the accident were (1) the rapid capsizing of the helicopter due to

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<sup>22</sup> Witnesses observed the airplane performing aggressive aerobatic maneuvers and then saw the airplane descend to the ground.

<sup>23</sup> The pilot reported that, during cruise flight, the aircraft became "extremely difficult" to control, and the fabric wing skin was "fluttering intensely." During the landing roll, the aircraft tipped onto one wing.

<sup>24</sup> Paperwork for the operator's flights referred to them as instructional flights, but these flights were advertised and marketed as sightseeing flights. FAA regulations prohibited (and continue to prohibit) the use of special light sport aircraft for revenue sightseeing flights.

<sup>25</sup> The NTSB determined that both Liberty Helicopters and NYONair "demonstrated deliberate efforts to operate the FlyNYON revenue passenger-carrying flights under Part 91 as aerial photography flights and to avoid any indication that the flights may be commercial air tours, which would be subject to additional FAA requirements and oversight that did not apply to aerial photography flights."

partial inflation of the emergency flotation system and (2) Liberty and NYONair's use of the harness/tether system that hindered passenger egress.

### **1.3 Safety Issues Associated with Part 91 Revenue Passenger-Carrying Operations**

This section discusses the findings from the eight previously described accidents (which are referred to by the location of the accident)—Honolulu, Hawaii; Lockhart, Texas; Mokuleia, Hawaii; Windsor Locks, Connecticut; Morrisville, Vermont; Four Corners, California; Poipu, Hawaii; and New York, New York. The NTSB is concerned that these safety issues continue to recur at multiple Part 91 revenue passenger-carrying operators; as a result, safety improvements are needed to avoid placing future paying passengers at risk.

#### **1.3.1 Lack of Structured Pilot Training and Deficiencies in Pilot Skills and Decision-making**

The NTSB's investigation of the Mokuleia accident found that OPC did not have, and was not required to have, a structured pilot training program to ensure that company pilots, including the accident pilot, were proficient in the Beech King Air 65-A90 airplane and commercial parachute jump operations before conducting flights. A former OPC pilot, who provided King Air 65-A90 training to multiple OPC pilots but did not train the accident pilot, stated that the company's only direction for training was to teach new pilots how to start the engines, taxi the airplane, take off, fly the jump run, and land the airplane, after which the new pilots would be "good to go." In addition, the former company pilot stated that most of OPC's training involved viewing King Air Academy videos on YouTube instead of hands-on training.

The accident pilot's logbook and company records showed that the pilot received only 1 hour of dedicated company flight instruction, which occurred during six commercial parachute jump flights over a 2-day period. This amount of instruction was insufficient for a new company pilot and in particular the accident pilot, who lacked adequate training and experience in the airplane make and model before he started working for OPC.<sup>26</sup>

The pilot's training was conducted in the accident airplane, and the OPC pilot who provided the training stated that the accident pilot, while in the right seat, watched him perform one or two parachute jump flights and that the accident pilot then operated the other parachute jump flights. Because the accident airplane did not have a right-side control yoke, the accident pilot's training did not include any manipulation of the flight controls before he began operating parachute jump flights. Thus, the NTSB concluded that the Beech King Air 65-A90 flight training that OPC provided to new company pilots was insufficient and did not ensure that the accident

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<sup>26</sup> Before the accident pilot began his employment with OPC, he had logged about 53 hours in the Beech King Air airplane. Because the pilot logged this King Air flight time as dual instruction while still a student pilot, he likely did not fully comprehend much of that instruction.

pilot was prepared for the company's parachute jump operations, including the operation of the airplane near its aft CG limit.<sup>27</sup>

For the Lockhart accident, the NTSB found that the balloon pilot should have canceled the flight based on weather information that showed that visual conditions were deteriorating and were not suitable for flight (due to the possible formation of fog and the cloud cover). However, the pilot did not obtain updated weather information and thus made the decision to launch.

The NTSB found that the pilot also exhibited poor decision-making when he (1) continued flying the balloon in and out of clouds and in decreased visibility conditions despite having opportunities to land safely in visual conditions; (2) climbed the balloon above the clouds where visibility was better, but the ground was either barely or not visible, which greatly limited the pilot's ability to identify suitable landing sites; and (3) attempted to land the balloon in reduced visibility conditions, which diminished his ability to see and avoid obstacles and resulted in the balloon impacting power lines that were obscured by low clouds, fog, or both. In addition, the pilot was taking medications for depression and attention deficit hyperactivity disorder, which likely affected his ability to make safe decisions during the flight.

For the Morrisville accident, the NTSB found that, according to the weight and balance calculations, the glider was likely about 50 pounds over its maximum gross weight (about 10% above the glider's maximum payload), yet the pilot decided to operate the glider outside of its published weight limitations. The NTSB also found that the glider's heavier gross weight and resulting higher stall speed increased the glider's susceptibility to a stall/spin.

### 1.3.2 Inadequate Aircraft Maintenance

The NTSB's investigation of the Mokuleia accident found that the airplane (the only one that OPC operated from May 2017 to the accident date) had a twisted left wing as a result of a previous accident in July 2016, which occurred about 3 years before the Mokuleia accident and involved a different parachute jump operator.<sup>28</sup> The twisted left wing was not properly repaired after the previous accident or before OPC's lease of the airplane began in May 2017. Because of the wing twist, the airplane required full left-wing-down aileron trim to fly straight and level, but no evidence showed that any company pilot (including the accident pilot) reported this issue to the OPC owner, who was ultimately responsible for the safety of the airplane.<sup>29</sup> Further, the OPC contract mechanic either did not detect or chose not to repair the wing twist during inspections of the airplane.

In addition to the issues associated with the airplane's twisted left wing, the airplane's maintenance records showed several discrepancies that occurred while the airplane was leased to

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<sup>27</sup> The pilot's flight training did not provide him with the necessary experience to understand the altered handling qualities of the airplane with a CG that was near the aft limit.

<sup>28</sup> For information about the previous accident, see NTSB case number [WPR16LA150](#).

<sup>29</sup> A photograph taken during the June 2017 ferry flight from the US mainland to Hawaii showed the apparent full deflection of the left aileron trim tab. A video of the airplane, which was taken about 30 minutes before the accident flight, also showed the deflection of the left aileron trim tab.



OPC.<sup>30</sup> For example, the OPC contract mechanic signed off a phased inspection as completed, but some inspection tasks related to the airplane's flight control system were not signed off as completed, including adjusting cable tensions into their normal ranges.<sup>31</sup> Also, no logbook entries were found to document the daily engine compressor wash that was required to prevent corrosion when the airplane was operated in a salty atmosphere.

The OPC contract mechanic stated that the accident pilot was performing the engine compressor washes, which would have been inappropriate given that the pilot did not hold an airframe and powerplant (A&P) certificate and was not the registered owner of the airplane.<sup>32</sup> Further, the mechanic should have been performing that task according to engine maintenance manual procedures.

The maintenance records also showed discrepancies before the airplane's lease with OPC began. For example, the repairs that resulted from the July 2016 accident included the replacement of the right horizontal stabilizer (which had departed the airplane during flight) with a horizontal stabilizer assembly from a Beech King Air 65-90, an earlier airplane model. According to Textron Aviation documents, the model 65-90 horizontal stabilizer assembly was not an acceptable replacement for the horizontal stabilizer on the accident airplane, a 65-A90 model.<sup>33</sup> Also, no major repair record had been filed with the FAA for the repairs associated with the airplane's right horizontal stabilizer; the mechanic who signed off on the repairs in the airplane logbook was responsible for filing the record.<sup>34</sup>

In addition, FAA Airworthiness Directive (AD) 77-22-01 required that an inspection of the aft bulkhead and horizontal stabilizer aft spars be accomplished every 600 hours. Compliance with the AD was 712 hours overdue at the time of the July 2016 accident. Although the required inspection was subsequently performed along with the repairs resulting from that accident, the previous operator's lack of timely compliance with the AD was another example of inadequate maintenance for an airplane that was being used for parachute jump operations.

During the Windsor Locks accident investigation, the NTSB found that the accident pilot, who held an A&P certificate and was the director of maintenance for the operator (the Collings Foundation), performed the airplane's maintenance while the airplane was on tour (as stated in

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<sup>30</sup> The NTSB also found that the airplane's maintenance records were not kept in a manner that was consistent with the requirements of 14 *CFR* Parts 43 and 91.

<sup>31</sup> Although out-of-specification cable tensions would likely not have contributed to this accident, the low elevator and rudder cable tensions could have led to decreased motion or deflection, and the high aileron and aileron trim cable tensions could have led to premature wear on the cable parts. No record was found for the elevator trim tab cable tension.

<sup>32</sup> Title 14 *CFR* Part 43, appendix A, states that a registered owner of an airplane can perform preventive maintenance as long as the owner also holds at least a private pilot certificate.

<sup>33</sup> Textron Aviation acquired Beechcraft Aircraft Company in March 2014.

<sup>34</sup> According to 14 *CFR* Part 43, appendix B, "each person performing a major repair or major alteration shall— (1) Execute FAA Form 337... (2) Give a signed copy of that form to the aircraft owner; and (3) Forward a copy of that form to the FAA... within 48 hours after the aircraft, airframe, aircraft engine, propeller, or appliance is approved for return to service."

section 1.2.2), including daily and progressive 25-hour inspections.<sup>35</sup> However, teardown examination of the Nos. 3 and 4 engines revealed maintenance issues that were not addressed while the airplane was on its current tour. Specifically, teardown examination of the No. 3 engine revealed spark plugs that were worn beyond the manufacturer's specifications. Teardown examination of the No. 4 engine revealed that the P-lead for the left magneto was partially pulled out of the magneto housing and that a single strand of safety wire was around the retaining nut, which allowed the grounding tab to contact the housing and caused the magneto to short.

In addition, testing of the right magneto produced a weak or an intermittent spark on most of the leads because of wear to the compensator cam and associated cam follower, resulting in a gap in the magneto's points that was less than the minimum gap that the manufacturer required. The shorted-out left magneto would have caused rough engine operation and a partial loss of engine power that would have been exacerbated by the weak right magneto, which is likely what prompted the pilot to shut down the No. 4 engine and return to the airport.

For the Honolulu accident, the NTSB found that maintenance had recently been conducted on the engine-to-transmission drive shaft and that a mechanic's assistant, who did not possess an A&P certificate, had performed some of this maintenance (with some supervision from a mechanic with an A&P certificate). The NTSB also found that grease was likely not applied to the drive shaft coupling during maintenance, which was not consistent with instructions in the manufacturer's maintenance manual.

In addition to the improper maintenance, the NTSB's review of the helicopter's maintenance records found no entries pertaining to a current annual inspection or a 100-hour inspection, and a component inspection sheet revealed several required component inspections that were overdue at the time of the accident.<sup>36</sup> The NTSB determined that, although the FAA was conducting oversight in accordance with its guidance for Part 91 operations, increased inspections might have uncovered the inadequate maintenance and documentation, which, in turn, could have prevented the accident.<sup>37</sup>

For the Morrisville accident, the NTSB found that the glider's type certificate data sheet required lap belts and shoulder harnesses for each occupant of the glider, but the accident glider had been modified and was instead equipped with a single lap restraint for the pilot (in the front seat) and a single lap restraint for both passengers (in the rear seat). The rear seat lap belt mounting hardware failed in overload likely because of the combined weight of the rear seat passengers. The NTSB also found that the installed seat belts were not approved for the glider and that, according

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<sup>35</sup> The airplane was on tour for about 10 months each year. When the airplane was not on tour, a maintenance facility in New Smyrna Beach, Florida, performed the maintenance. Review of the maintenance records showed that the airplane was properly maintained by the facility.

<sup>36</sup> Also, the maintenance that had recently been conducted on the engine-to-transmission drive shaft was not reflected in the helicopter's maintenance records.

<sup>37</sup> According to FAA Order 1800.56P, National Flight Standards Work Program Guidelines (which was dated August 11, 2015, and in effect at the time of the accident), FAA inspectors should conduct inspections (for example, ramp inspections, spot inspections, aircraft records inspections, or AD compliance inspections) annually for 10% of all air tour operators that have LOAs under 14 *CFR* 91.147. Records showed that the FAA's last ramp or aircraft records inspection for Genesis Helicopters occurred in January 2013, but that inspection involved a different helicopter than the accident helicopter.

to an FAA survivability assessment, the seat belt that the two passengers shared “significantly diminished the rear seat occupants’ survivability” during the accident.

During its investigation of the Four Corners accident, the NTSB found that airplanes in the company’s fleet were flown beyond their G (vertical acceleration) limitations; as a result, the airplanes were required to undergo additional maintenance checks. However, no evidence indicated that these checks had been performed on the accident airplane, which the accident pilot had previously flown beyond its G limitations; thus, the airplane was likely not airworthy at the time of the accident.

For the Poipu accident, postaccident examination of the aircraft revealed damage to the fabric nose cone, which was installed over the wing leading edge tubes. The nose cone damage was primarily due to the nose cone remaining in place when the wings were folded for transport or storage, a practice that was strongly discouraged by the manufacturer. In addition, the pilot had stored the aircraft outside on a regular basis, which was contrary to the manufacturer’s guidance. No evidence showed that the operator or the accident pilot had inspected the nose cone and wing upper surface before flight, and the failure to conduct thorough preflight inspections prevented the timely detection of the deterioration of the nose cone fabric.

### **1.3.3 Insufficient Federal Aviation Administration Oversight**

The NTSB’s investigation of the Mokuleia accident found that, even though FAA inspectors accomplished the inspections of OPC that the agency required, those inspections were insufficient for ensuring the safety of this commercial passenger-carrying operation. FAA Order 8900.1, Flight Standards Information Management System, stated that annual inspections of each parachute jump operation within an FAA flight standards district office’s (FSDO) jurisdiction should be conducted.<sup>38</sup> However, during a postaccident interview, a former operations inspector at the Honolulu FSDO (which provided oversight of OPC) stated that the surveillance that the FAA required for parachute jump operations was not extensive and that the FAA had limited oversight of those operations.<sup>39</sup>

On March 7, 2018, the FAA FSDO operations inspector conducted a parachute jump inspection and a ramp inspection at OPC.<sup>40</sup> According to FAA records, the parachute jump inspection included an observation of parachute jumps for cloud clearance requirements and a spot check of two tandem parachute systems to ensure that the reserve parachute packing dates were current. The ramp inspection included a check of the airplane, which consisted of a walk-around to ensure that the airplane was properly configured with seat belts, as well as a check of the pilot

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<sup>38</sup> Guidance for inspections of parachute jump operations was provided in Order 8900.1, volume 6, chapter 11, section 5, “Surveillance of Sport Parachute Activities.” Additional guidance in the order was contained in volume 6, chapter 1, section 3, “Inspect Part 91 Maintenance Records,” and section 4, “Conduct a Part 91 Ramp Inspection,” which defined a ramp inspection as “surveillance of an airman, operator, air agency, or aircraft...sufficient to show compliance with [federal regulations] during actual operations at an airport or heliport.”

<sup>39</sup> Surveillance is the method that the FAA uses to perform oversight.

<sup>40</sup> This inspection occurred during the fiscal year 2018 cycle (October 1, 2017, to September 30, 2018). The fiscal year 2019 inspection had not occurred before the date of the accident (June 21, 2019) but was not required to be completed until September 30, 2019.

and medical certificates of the company pilot at the time. The operations inspector stated that he examined the flight manuals, which appeared to be current, but did not review the pilot's flight logbook or speak with the OPC owner, and the inspector could not recall if he saw the airplane logbook. The operations inspector also stated that OPC had met the requirements of the inspections.

On December 7, 2017, an FAA FSDO airworthiness inspector conducted a ramp inspection at OPC, one purpose of which was to review the general airworthiness of the airplane and examine it for any damage that could affect safety of flight. The airworthiness inspector also conducted an aircraft records inspection to ensure, among other things, that records showing major repairs and major alterations were being retained. FAA records indicated that the results of the December 2017 inspections were "satisfactory." The records did not note the significant problems with the airplane's left wing, but the general airworthiness ramp inspection, which is usually conducted as a walk-around check, typically identifies obvious issues only, such as missing placards and fluid leaks.<sup>41</sup>

The ramp inspections of OPC provided essentially the same level of surveillance as that for any Part 91 general aviation operation. In our report on the Mokuleia accident investigation, the NTSB acknowledged that parachutists assume a level of risk while participating in parachute jump activities but stated that parachutists are airplane passengers during the taxi, takeoff, and climb phases of flight and should thus be assured of a reasonable level of safety, including adequate FAA surveillance of parachute jump operations. However, OPC (and other parachute jump operators) did not receive the FAA oversight and surveillance needed to ensure this reasonable level of safety for those flight phases.

The NTSB's investigation of the Lockhart accident found that the FAA's primary method of oversight for balloon operations was to inspect a sample of balloon operators that attended balloon festivals. Specifically, between January 1, 2014, and December 15, 2016, the FAA conducted 2,300 balloon-related surveillance activities. Most of this surveillance was conducted at nearly 100 balloon gatherings; less than 2% of the surveillance occurred where an individual balloon operator was located. A review of FAA Program Tracking and Reporting Subsystem data found no records identifying the pilot or the operator of the accident flight as the subject of any inspection.

The NTSB expressed concern about the FAA's primary oversight method for balloon operations because not all balloon operators attend balloon festivals and some operators might intentionally not attend these festivals to avoid surveillance. The NTSB concluded that the FAA's balloon operations oversight method did not target those operations that posed the most significant safety risks to members of the public who participate in commercial balloon sightseeing activities. As a result, on October 31, 2017, the NTSB recommended that the FAA take the following actions:

Analyze your current policies, procedures, and tools for conducting oversight of commercial balloon operations in accordance with your Integrated Oversight

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<sup>41</sup> The airworthiness inspector was not available to be interviewed; as a result, the NTSB could not determine whether he conducted the inspections at OPC according to FAA guidance and whether he observed the left wing anomaly on the accident airplane.

Philosophy, taking into account the findings of this accident; based on this analysis, develop and implement more effective ways to target oversight of the operators and operations that pose the most significant safety risks to the public. (A-17-45)<sup>[42]</sup>

On August 2, 2018, the FAA stated that it planned to develop and implement more effective ways to target oversight of operators that pose the most significant safety risk to the public and that it would provide an update, by May 31, 2019, about the FAA's progress regarding this safety recommendation. On September 18, 2018, the NTSB classified this recommendation "Open—Acceptable Response."<sup>43</sup> However, as of March 1, 2021, the NTSB had not received an update from the FAA about its progress in implementing the recommended actions.

During its investigation of the Windsor Locks accident, the NTSB learned that, during the months preceding the accident while the airplane was on tour, neither the FAA's Orlando, Florida, FSDO, which has jurisdiction for the Collings Foundation's operation, nor any other FAA FSDO performed oversight of the operation or inspected the airplane to assess its condition.<sup>44</sup> (The FAA was not required to perform comprehensive oversight of Part 91 operations, including LHFE operations.) An aviation safety inspector at the Orlando FSDO had previously been assigned to the operator as a point of contact only. The point of contact was responsible for answering regulatory questions and did not conduct ramp inspections or en route surveillance. The point of contact died in 2017 and was not replaced at the FSDO. The Collings Foundation then sent regulatory questions via e-mail to another FSDO inspector (who was not assigned as the point of contact); this inspector advised the foundation to send questions or concerns to the Orlando FSDO's general e-mail address. According to the Collings Foundation chief pilot, after several messages were not answered, foundation staff members stopped sending messages. As a result, the Collings Foundation operated with minimal to no FAA oversight.

During its investigation of the Four Corners accident, the NTSB found that, although the operator (Sky Combat Ace) provided upset recovery and tailwheel endorsement flight training under 14 *CFR* Part 61, most customers (including the accident passenger) did not hold a pilot certificate and purchased flights for the aerobatic and air combat experiences.<sup>45</sup> The NTSB also

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<sup>42</sup> (a) Safety Recommendation A-17-45 superseded A-14-11 and -12, which addressed the need for commercial balloon operators to have an LOA and the need for FAA principal operations inspectors to include, in their general surveillance activities, commercial balloon operators that hold an LOA, respectively. Both recommendations were classified "Closed—Unacceptable Action/Superseded" due, in part, to the FAA's lack of action in response to the recommendations. (b) The FAA's Integrated Oversight Philosophy applies to the safety oversight programs of all FAA organizations that have regulatory oversight responsibilities. This policy includes, among other things, risk-based decision-making, safety management systems, and voluntary safety reporting programs. For more information about this policy, see <https://www.faa.gov/about/initiatives/iop/>, (accessed March 23, 2021).

<sup>43</sup> In its August 2018 letter, the FAA stated that it would "first identify operators of balloons 140,000 cubic feet or larger" and then increase surveillance of those operators; the NTSB's September 2018 letter asked the FAA to provide information regarding how it determined the 140,000-cubic ft threshold for increased oversight.

<sup>44</sup> As a result of the Windsor Locks accident, the FAA issued Notice N 8900.568, which had an effective date of November 3, 2020. The notice instructed inspectors to perform an audit of all LHFE operators within their FSDO's jurisdiction by the end of calendar year 2021 to "ensure compliance with regulations, the C/Ls [conditions and limitations] of the exemptions, and manual systems." The FAA stated that the information in this notice would be incorporated into Order 8900.1 before November 3, 2021, the expiration date of the notice.

<sup>45</sup> Title 14 *CFR* Part 61 addresses the certification of pilots, flight instructors, and ground instructors. Limited FAA oversight exists for Part 61 operations.

found that no regulations specifically addressed the certification and oversight of the company's flight operations (as well as those of other companies with essentially the same operational setup) because of the 14 *CFR* 119.1(e) exceptions for student instruction or training flights. Thus, by operating as a Part 61 flight training provider, Sky Combat Ace was able to advertise its services, expose paying passengers to high-risk flight profiles, and circumvent the regulations and oversight for operators that provide flights for compensation or hire.<sup>46</sup>

The FAA inspector assigned to the Poipu accident investigation stated that operators in Hawaii, including the accident operator, were “conducting flight tours under the guise of flight instruction” and that the operators’ flight records showed “hundreds of flights” listed as “introductory flights.” The inspector also stated that these operators did not conduct any ground school training or have training facilities and that they had no students returning for follow-up training. In addition, the inspector stated that, because these operators were not certificated revenue sightseeing flight providers, the ability of inspectors at the FAA’s Honolulu FSDO to conduct regular surveillance of those operators was “constrained” due to limited resources.

The NTSB’s investigation of the New York accident found that the FAA lacked policy and guidance for its inspectors to support comprehensive inspections of Part 91 operations conducted under any of the exceptions in 14 *CFR* 119.1(e) and to ensure that those operators were appropriately managing risks. During a postaccident interview conducted as part of the investigation, the FAA principal operations inspector (POI) responsible for oversight of Liberty Helicopter’s Part 135 operating certificate stated that he was not “compelled” to observe Liberty’s Part 91 operation for NYONair. The POI also stated that the FAA’s focus on Part 91 operations was “nearly nonexistent” and that these operations were not a priority for surveillance or inspection.

The NTSB’s report on the New York accident noted that the POI’s statements highlighted the problem with the level of safety oversight that the FAA applies to revenue passenger-carrying operations that are conducted under Part 91 due to various 14 *CFR* 119.1(e) exceptions. The NTSB concluded that, because the FAA continues to allow passenger revenue operations to be conducted under Part 91, the FAA needed to provide inspectors with sufficient guidance to pursue more comprehensive oversight, especially given that some of these operations carry thousands of passengers annually.<sup>47</sup> As a result, on January 16, 2020, the NTSB recommended the following to the FAA:

Revise Order 8900.1, Flight Standards Information Management System, to include guidance for inspectors who oversee Title 14 *Code of Federal Regulations (CFR)* Part 91 operations conducted under any of the 14 *CFR* 119.1(e) exceptions to

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<sup>46</sup> The president of Sky Combat Ace stated that he had discussed certification options for the company with the FAA. The company president also stated that he ruled out operating under Part 135 and 14 *CFR* 91.147 because passengers would not be allowed to manipulate the flight controls, which occurs during air combat/extreme aerobatic experience flights.

<sup>47</sup> The report for the New York accident stated that between 11,000 and 12,000 passengers were carried by FlyNYON flights during the year before the accident.

identify potential hazards and ensure that operators are appropriately managing the associated risks. (A-19-30)

On April 6, 2020, the FAA stated that it was evaluating air tour accidents that occurred between 2009 and 2019 to (1) identify significant trends involving these accidents in operations conducted under Parts 91 and 135 and (2) determine the need for policy revision and rulemaking to implement this safety recommendation. The FAA also stated that Order 1800.56, National Flight Standards Work Program Guidelines, had been revised three times since the date of the accident and that the next revision of the order would increase the number of required inspections from 30% to 50% of the air tour operators that have been authorized to operate Part 91 air tours conducted under any of the 14 *CFR* 119.1(e) exceptions.<sup>48</sup> (This revision of the order, 1800.56U, was issued on June 20, 2020.)

On September 28, 2020, the NTSB noted that, although the revisions to Order 1800.56 are positive, the order does not include guidance for inspectors who oversee Part 91 operations conducted under any of the 14 *CFR* 119.1(e) exceptions regarding how to identify potential hazards and ensure that operators are appropriately managing the associated risks. The NTSB classified Safety Recommendation A-19-30 “Open—Acceptable Response” pending a review of guidance that addresses this concern.

### 1.3.4 Organizational Safety Management

During the Windsor Locks accident investigation, the NTSB learned that the Collings Foundation implemented an SMS in May 2017, about 2 1/2 years before the accident. The SMS safety officer, who was responsible for managing the SMS, was not an employee of the organization; he was a part-time volunteer pilot who also worked for a commercial air carrier. When the SMS safety officer flew for the Collings Foundation, he would advise the foundation’s executive director or chief pilot about any safety issue that needed correcting. The Collings Foundation pilots who were interviewed after the accident indicated that they were aware of the foundation’s SMS; however, all of those pilots also indicated that, if a safety issue arose, they would discuss the issue with the chief pilot instead of submitting a safety report to the SMS safety officer.<sup>49</sup>

During a postaccident interview, the SMS safety officer at the Collings Foundation stated that, as of January 29, 2020 (the date of the postaccident interview), 33 reports had been received. The safety officer also stated that, toward the end of each calendar year, the reports were reviewed to make additions to the annual training that would begin the next year. According to the Collings Foundation’s party submission for this accident, 2 of the 33 reports pertained to the accident airplane. Those two reports addressed passengers moving during taxi operations for a May 2017 flight and a cowling panel that separated from the airplane during a May 2018 flight. The Collings

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<sup>48</sup> FAA Order 1800.56T, which became effective on July 31, 2019, increased the number of inspections from 10% to 30%.

<sup>49</sup> The Collings Foundation’s SMS manual stated, “if a hazard is recognized the observer shall complete a Wings of Freedom Safety report through [the foundation’s] anonymous Online system or directly submit it to the Safety Officer.” (Wings of Freedom was the name of the airplane’s tour.)

Foundation indicated that those issues, as well as the issues raised in the other 31 reports, were “addressed promptly,” but the specific actions taken in response were not mentioned.

In addition, according to the FAA’s most recent letter to the Collings Foundation that granted its LHFE exemption from the Part 91 and 119 requirements discussed previously, “Collings must provide its manual system documents, including revisions...to the Collings jurisdictional FSDO.... These documents include, at a minimum...[the] Collings Safety Management System (SMS) Manual.” The LHFE exemption letter also stated the following:

Collings must maintain and apply on a continuous basis its safety and risk management program that meets or exceeds the criteria specified in the FAA Policy for all operations subject to this exemption. This includes, at a minimum, the Collings SMS Manual, used as a basis for an equivalent level of safety.<sup>[50]</sup>

The Collings Foundation SMS manual, revision 1.2, dated September 10, 2017, was in effect at the time of the accident. The manual stated, in the “Background” section, “this is not a regulatory or approved document.” Thus, although the Collings Foundation was required to provide its SMS manual to the FAA’s Orlando FSDO, the FSDO was not required to review the manual or ensure that the foundation’s SMS met or exceeded the safety risk management criteria in the FAA’s policy for operators with LHFE exemptions.<sup>51</sup>

During the Mokuleia accident investigation, the NTSB found that OPC (1) failed to ensure that its operations and the accident pilot’s actions were consistent with applicable federal regulations, (2) lacked standard operating procedures and structured pilot training, and (3) used a flawed method for calculating the airplane’s weight and CG.<sup>52</sup> These findings, as well as OPC’s failure to address the safety hazard involving the airplane used for parachute jump operations, demonstrated the company’s inadequate safety management.

During the Four Corners investigation, the NTSB found that the accident pilot routinely flew company airplanes beyond their operating limitations and at speeds that were close to the never-exceed speed. The NTSB also found that other company pilots disregarded the airplanes’ operating limitations and the company’s policies regarding airspeed and G limitations. Sky Combat Ace did not know about these flights because it lacked effective internal oversight controls to identify that company pilots were routinely flying company airplanes beyond their operating limitations.

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<sup>50</sup> The exemption letter further stated that “the conditions and limitations included with an exemption may not be based on specific regulations, but are the FAA’s means of ensuring an equivalent level of safety.”

<sup>51</sup> The FAA’s policy regarding LHFE exemptions stated that each operator should be guided by criteria including “an understanding and use of Safety Risk Management (SRM) principles” and “a plan to mitigate risks as they become known, or to correct an unsafe condition or practice.” The policy further stated that such risks included, but were not limited to, those involving maintenance and operations.

<sup>52</sup> The NTSB also found that OPC’s operations and the pilot’s actions were not consistent with several Part 91 and 105 regulations, including 14 *CFR* 91.13, Careless or Reckless Operation; 91.105, Flight Crewmembers at Stations; 91.303, Aerobatic Flight; 91.409, Inspections; 105.13, Radio Equipment and Use Requirements; and 105.25, Parachute Operations in Designated Airspace.



During the New York accident investigation, the NTSB found that ineffective safety management at both Liberty Helicopters and NYONair allowed foreseeable safety risks to remain unmitigated, including the harness/tether system interfering with the floor-mounted controls and hindering passenger egress during an emergency. The NTSB also found that Liberty's managers repeatedly lacked involvement in key decisions related to Liberty-operated FlyNYON flights and allowed NYONair to influence core aspects of the operational control of those flights.<sup>53</sup>

In addition, the NTSB found that Liberty Helicopters did not have a robust safety management structure. Liberty's director of safety left the company in October 2017, and his position was not backfilled. Liberty's former safety officer also left the company, and the new safety officer began working in that position in January 2018 (2 months before the accident). Liberty's new safety officer stated that his position was informal and that he had no training for that role except for a briefing from the company's former safety officer.

Further, Liberty Helicopters had a safety manual that served as a "guide for all company personnel in complying with the corporate policy for safety management and mishap prevention," but the manual was not part of Liberty's FAA-approved or -accepted manuals. The company's former director of safety stated that he had performed some of the safety actions prescribed in the manual, but there was no indication that the safety officer was subsequently tasked to perform these actions.

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<sup>53</sup> For example, NYONair's chief executive officer (CEO) barred Liberty's safety officer from conducting FlyNYON flights and participating in regularly scheduled pilot meetings due to a personal conflict that occurred during a March 7, 2018, pilot meeting. During that meeting, Liberty's safety officer disagreed with a statement made by NYONair's CEO. Afterward, NYONair's CEO sent a text message to Liberty's chief pilot indicating that the safety officer's services were no longer required for FlyNYON flights. No evidence indicated that Liberty's director of operations approved this decision or intervened on behalf of Liberty's safety officer.

## 2. Analysis

Various revenue passenger-carrying operations are conducted under the operating rules of Part 91; as a result, these operations are not subject to the stricter safety requirements and surveillance that apply to other commercial aviation operations. The NTSB recognizes that it might not be practical or feasible for some Part 91 revenue passenger-carrying operations, due to their mission, to be conducted under other established commercial operating rules (such as Part 135). However, operationally specific regulations are needed for commercial operations currently conducted under Part 91 to increase safety for members of the public who pay to participate in these activities.

The FAA had previously stated that passengers who are transported under Parts 121 and 135 “exercise no control over and bear no responsibility for the airworthiness or operation of the aircraft aboard which they are flown” and that, as a result, the “appropriate level of public safety is provided by...very stringent regulations and oversight under part 121 and part 135.” However, even though passengers exercise no control over, and bear no responsibility for, revenue passenger-carrying flights conducted under Part 91, the FAA continues to allow these flights to be conducted under less stringent regulations and with little to no oversight. Further, some Part 91 revenue passenger-carrying operations have the capacity to carry more passengers than Part 135 commercial air taxi and air tour operations and some Part 121 air carrier operations, all of which require operating certificates and operations specifications under Part 119.

The NTSB also recognizes that the types of Part 91 revenue passenger-carrying operations are diverse. Nevertheless, the need for greater safety requirements and more comprehensive oversight applies to all of these operations, as discussed in the sections that follow.

### 2.1 Need for an Appropriate Framework for Part 91 Revenue Passenger-Carrying Operations

The operating rules for Part 91 general aviation, which include revenue passenger-carrying operations, do not require operating certificates, operations specifications, FAA-accepted general operations manuals, FAA-approved training programs, and FAA-approved maintenance programs, all of which are required for Part 135 operations.<sup>54</sup> Because Part 91 revenue passenger-carrying operators are not required to have initial and recurrent pilot training programs, the operators have no formal method to determine whether pilots are adequately prepared for the responsibilities associated with the company’s operations.<sup>55</sup>

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<sup>54</sup> According to FAA Order 8900.1, volume 3, chapter 32, section 1, Background and Definitions, an FAA-accepted manual is not required to have FAA approval. (An FAA-approved manual is prepared by the manufacturer and approved by the FAA’s Aircraft Certification Office.) Operators are required to submit accepted manuals to the FAA for review.

<sup>55</sup> The only testing requirement for pilots of revenue passenger-carrying operations is to comply with the biennial flight review requirements of 14 *CFR* 61.56. This regulation requires pilots to complete a minimum of 1 hour of ground training and 1 hour of flight training covering Part 91 rules, maneuvers, and procedures to ensure that the pilot

The NTSB is concerned about the lack of a requirement for operationally specific pilot training programs for Part 91 revenue passenger-carrying operations, especially given the deficiencies in basic airmanship tasks and decision-making found during the investigations of the Mokuleia and Lockhart accidents, respectively.<sup>56</sup> Also, 14 *CFR* 91.409 contains specific maintenance requirements for Part 91 operators, including annual aircraft inspections as well as 100-hour inspections for aircraft carrying passengers for hire. However, the investigations of the Windsor Locks and Mokuleia accidents revealed airplane mechanical deficiencies, indicating that the maintenance requirements were not being met.<sup>57</sup>

Some Part 91 revenue passenger-carrying flights are operated in ways not reasonably suited for compliance with all Part 135 regulations. For example, regarding seat belt usage, Part 135 does not allow passengers to share seat belts during flight, which can occur during tandem parachute jump operations, and the baskets that carry occupants during hot air balloon sightseeing flights are generally not equipped with passenger restraints. Also, Part 135 does not allow passengers to manipulate flight controls, which occurs during air combat/extreme aerobatic experience flights. Further, LHFE aircraft typically do not have standard operating certificates, which are required under Part 135. Although Part 135 is not appropriate for some types of revenue passenger-carrying operations currently conducted under Part 91, a more robust regulatory framework is needed for these operations to increase the level of public safety.

The NTSB recognizes that many Part 91 revenue passenger-carrying operations involve small operators that might believe that, because of their size, they would not be able to develop more robust organizational structures and programs. However, numerous Part 135 operators are the same size as some Part 91 operators and have been able to incorporate the more stringent commercial operation requirements.<sup>58</sup>

In 2011, the New Zealand Ministry of Transport recognized that sport and recreational aviation operators had grown into “significant commercial operations” but that the existing regulatory standards that applied to these operations, referred to as “adventure aviation,” were designed for pilots who flew for their own recreational purposes (New Zealand Ministry of Transport 2011). According to the Ministry of Transport, examples of adventure aviation include the commercial operation of vintage aircraft, gliders, hot air balloons, and parachute jump aircraft used to carry passengers for hire or reward (compensation) to provide an adventure experience (and not for transportation or training purposes).

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can safely exercise the privileges of the pilot’s certificate. The flight training can be accomplished in any aircraft that the pilot is rated to fly.

<sup>56</sup> In addition, the investigation of the Poipu accident identified the pilot’s inadequate preflight inspections, and the investigation of the Morrisville accident identified the pilot’s incorrect weight and balance calculation.

<sup>57</sup> Other accident investigations revealed aircraft maintenance deficiencies. For example, the investigation of the Honolulu accident found that the helicopter’s engine-to-transmission drive shaft had been improperly maintained, and the investigation of the Four Corners accident found that required additional maintenance checks (to address the airplane’s operation beyond its G limitations) were not accomplished.

<sup>58</sup> The FAA’s 2007 final rule for national air tour safety standards stated that “there are hundreds of part 135 small one- or two-plane operations.”

The New Zealand Ministry of Transport further recognized that a “significant change in the approach to safety regulation for commercial adventure aviation” was needed because the regulations at that time were not intended for commercial hire or reward activities. In addition, the existing regulations did not consider the aircraft and maneuvers involved in many adventure aviation operations. As a result, in November 2011, the Civil Aviation Authority of New Zealand (CAA of NZ) prescribed requirements under a new rule, Part 115, to regulate the certification and operation of any adventure aviation operation (CAA of NZ 2020). Part 115 requires adventure aviation operators to be certificated in a similar manner as commercial air transport operations using helicopters and small airplanes (CAA of NZ 2016). According to the CAA of NZ, Part 115 also requires adventure aviation operators to demonstrate, among other things, the following to receive an adventure aviation operator certificate:

- They have appropriate management systems, structures, and operating procedures in place to ensure compliance with the relevant safety standards
- Employees are appropriately qualified, and trained
- Equipment is appropriate to the task and properly maintained
- Key people are fit and proper to undertake their responsibilities

The NTSB commends the New Zealand Ministry of Transport and the CAA of NZ for recognizing that regulations addressing general aviation operations were insufficient for adventure aviation flights and for implementing the Part 115 regulations to provide an enhanced level of safety for these revenue passenger-carrying operations. The NTSB notes that, according to its review of accident data in the CAA of NZ’s quarterly aviation summary reports, no fatal accidents involving commercial adventure aviation aircraft operated under Part 115 occurred between 2011 and the third quarter of 2020.<sup>59</sup> The NTSB strongly believes that it is time for the FAA to take similar action to ensure the safety of revenue passenger-carrying operations currently conducted under Part 91; this action could involve the implementation of a new category or part. The NTSB concludes that the FAA has a responsibility to bolster regulations and oversight for all revenue passenger-carrying operations currently conducted under Part 91 to ensure an increased level of safety for those participants who pay for these flights.

The NTSB notes that commercial air tour operations are not considered to be adventure aviation operations in the CAA of NZ’s Part 115 regulations; instead, the CAA of NZ includes all commercial air tour operations under its Part 135 regulations for air operations for helicopters and small airplanes. In its report on the New York accident, the NTSB recognized the need for increased safety for commercial air tour flights that are currently conducted under Part 91. As a result, on January 16, 2020, the NTSB issued the following safety recommendation to the FAA:

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<sup>59</sup> The NTSB further notes that a fatal accident involving a commercial balloon operator occurred on January 7, 2012, about 2 months after Part 115 rule became effective. However, the final report by the Transport Accident Investigation Commission (the NTSB’s counterpart in New Zealand) stated that, because of “transitional arrangements,” balloon operators were not required to comply with Part 115 until May 1, 2012.

Develop and implement national standards within Title 14 *Code of Federal Regulations (CFR)* Part 135, or equivalent regulations, for all air tour operations with powered airplanes and rotorcraft to bring them under one set of standards with operations specifications, and eliminate the exception currently contained in 14 *CFR* 135.1.<sup>60]</sup> (A-19-31)

On April 6, 2020, the FAA stated that it was evaluating air tour accident reports from 2009 to 2019 “to identify significant trends indicating the impact of air tour accidents in operations under part 91 and part 135 as part of the evaluation to determine the need for policy revision and rulemaking options necessary to adopt [this recommendation].” On September 28, 2020, the NTSB classified Safety Recommendation A-19-31 “Open—Acceptable Response” pending a review of the FAA’s findings and plan for developing national standards for all air tour operations.

Safety Recommendation A-19-31 requested the same action as Safety Recommendation A-95-58 (see appendix C), which the NTSB issued about 25 years earlier. In October 2003, in response to this and other NTSB safety recommendations addressing the safety of air tour flights, the FAA issued an NPRM addressing national air tour safety standards (see section 1.1). The NPRM proposed that certain air tour flights would continue to operate under Part 91 and that operators of those air tour flights would be subject to a new LOA requirement. The NTSB believed that an LOA would likely address the intent of Safety Recommendation A-95-58. However, the FAA’s final rule regarding national air tour safety standards, issued in February 2007, did not require that LOAs include areas addressed by operations specifications.

The NTSB classified Safety Recommendation A-95-58 “Closed—Unacceptable Action” in November 2007 because the FAA’s final rule (1) continued the 14 *CFR* 119.1(e) exception that allowed air tour flights that departed and returned to the same airport and stayed within a 25-mile radius of the airport to be operated under Part 91 and (2) introduced an LOA requirement that did not include FAA oversight of all pilots, aircraft, and operations. Because that exception remains in effect and the LOAs required by 14 *CFR* 91.147 are insufficient for ensuring local air tour safety, the NTSB reiterates Safety Recommendation A-19-31.

Further, even though the NTSB classified Safety Recommendation A-19-31 “Open—Acceptable Response” during our earlier review of the FAA’s response to safety recommendations from the New York accident, the review performed for this report (which also considered the FAA’s response to Safety Recommendation A-95-58) demonstrates that the FAA should be implementing one level of safety for all commercial air tour operators, especially given the longstanding safety concerns in this area. As a result, the NTSB classifies Safety Recommendation A-19-31 “Open—Unacceptable Response.”

In addition, to address other Part 91 revenue passenger-carrying operations, the NTSB recommends that the FAA develop national safety standards, or equivalent regulations, for revenue passenger-carrying operations that are currently conducted under Part 91, including, but not limited to, sightseeing flights conducted in a hot air balloon, intentional parachute jump flights,

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<sup>60</sup> Title 14 *CFR* 135.1(a)(5), states that nonstop commercial air tour flights conducted in accordance with 14 *CFR* 119.1(e)(2) are excepted from the requirements of Part 135 provided that these operations comply with drug and alcohol testing requirements and the provisions of Part 136 subpart A and 14 *CFR* 91.147.

and LHFE and other vintage aircraft flights. These standards, or equivalent regulations, should include, at a minimum for each operation type, requirements for initial and recurrent training and maintenance and management policies and procedures.

## 2.2 Need to Address Regulatory Loopholes and Omissions

This report presents two examples of revenue passenger-carrying flights that were operating as student instruction: the Four Corners and Poipu accident investigations. The Poipu accident involved a tour flight operated by a trike company; the Four Corners accident involved aerobatics, high-G maneuvers, and a low-level bombing run simulation, all of which are components of an air combat/extreme aerobatic experience flight.

According to the FAA's August 3, 2017, legal interpretation, the terms "student instruction" and "training flights" have existed in regulations for more than 50 years. The FAA also stated that, for a flight to fall under the student instruction exception of 14 *CFR* 119.1(e)(1), the purpose of the flight "must be student instruction and the instruction must be provided by an authorized instructor."<sup>61</sup> The FAA added that, for a flight to fall under the training flight exception of 14 *CFR* 119.1(e)(3), the purpose of the flight "must be training to satisfy a regulatory requirement outside of part 61."

The revenue passengers aboard the Four Corners and Poipu accident flights were clearly not being carried for the purpose of student instruction. The Four Corners investigation determined that Sky Combat Ace's air combat/extreme aerobatic aircraft and curriculum were not appropriate for initial flight training. Also, both investigations determined that the FAA was aware of operators that were conducting flights under the guise of flight instruction but that the FAA's local FSDO inspectors did not have the means to provide the necessary oversight for these operations because of limitations in the regulatory framework for such operations.

The NTSB recognizes that it was decades ago that the FAA created the exceptions to allow student instruction and training flights to be operated outside of the scope of regulatory and oversight requirements that apply to operations conducted under an operating certificate. The NTSB further recognizes that, at that time, the FAA could not have envisioned that some operators, such as Sky Combat Ace, would use the student instruction exception to conduct air combat/extreme aerobatic experience flights.

In an April 16, 2013, legal interpretation, the FAA stated that, if an operator wanted to conduct an air combat flight in a standard category aircraft, the operator could do so under the 14 *CFR* 119.1(e)(2) exception for commercial air tours and 14 *CFR* 91.147.<sup>62</sup> However, the president of Sky Combat Ace decided not to operate his company under 14 *CFR* 91.147, which

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<sup>61</sup> In an e-mail dated September 22, 2020, the FAA described a "student" as any pilot (regardless of certificate level) who receives flight instruction from a flight instructor.

<sup>62</sup> The FAA stated that, for the purposes of the April 16, 2013, legal interpretation, an "air combat" flight was synonymous with a "military experience" flight, which the requestor of the legal interpretation described as "flight that is intended to demonstrate to a civilian participant the planning, strategy, physics, equipment and execution of a military training mission" and "flight that executes the planned mission, including aerobatics."

required an LOA, or under Part 135, which precluded passengers from manipulating the flight controls as part of the air combat/extreme aerobatic experience. Passenger manipulation of the flight controls is allowed only as part of student instruction or training flights. As a result, because no regulation prevented the company president from operating his company as a Part 61 flight training provider, he was able to circumvent 14 *CFR* 91.147 and Part 135 regulatory requirements.

This report also presents a nonstop commercial air tour flight that was operating as an aerial photography flight—the New York accident. As part of that investigation, on March 21, 2018, the NTSB requested that the FAA provide a legal interpretation of the flight’s operating requirements. In its April 30, 2018, response, the FAA stated that the 14 *CFR* 119.1(e)(4)(iii) aerial work/aerial photography exception “is meant for business-like, work-related operations such as newsgathering, aerial mapping, surveying, commercial photography, or commercial filming; not for personal, entertainment, or leisure purposes.”<sup>63</sup>

The FAA subsequently determined that the accident flight was a nonstop commercial air tour operated under Part 91 according to the 14 *CFR* 119.1(e)(2) exception rather than the aerial work/aerial photography exception that Liberty and NYONair claimed. The NTSB concluded that Liberty and NYONair exploited the 14 *CFR* 119.1(e)(4)(iii) exception so that they could avoid the additional FAA requirements and oversight that apply to commercial air tours conducted under either Part 135 or Part 91 with an LOA.

The NTSB understands that Part 91 revenue passenger-carrying operators offer services that address a demand in the aviation sector. However, the Four Corners, Poipu, and New York flights were clearly not operated as the 14 *CFR* 119.1(e) regulations intended. The NTSB concludes that some operators have been exploiting and/or inappropriately capitalizing on the exceptions contained in 14 *CFR* 119.1(e) to avoid the additional requirements and oversight intended to apply to the types of revenue passenger-carrying operations being conducted.

In addition, according to the FAA’s February 8, 2013, legal interpretation about commercial glider sightseeing operations, such flights are not required to comply with 14 *CFR* 91.147 rules or Part 136 commercial air tour rules. Also, even though the 14 *CFR* 119.1(e) exceptions do not include commercial glider operations, the FAA stated that such operations do not need a Part 119 operating certificate. Thus, the NTSB concludes that, because of a regulatory omission, commercial glider sightseeing flights have essentially been operating with almost no oversight.

The NTSB recognizes that other regulatory loopholes and omissions might also exist. Therefore, the NTSB recommends that the FAA identify shortcomings in 14 *CFR* 119.1(e) that would allow revenue passenger-carrying operators to avoid stricter regulations and oversight in

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<sup>63</sup> Because the terms “aerial work” and “aerial photography” were not defined in regulations, the NTSB recommended that the FAA revise 14 *CFR* 1.1, “General Definitions,” to include definitions for both terms that specify only the business-like, work-related aerial operations that the exception intended (Safety Recommendation A-19-29). On April 6, 2020, the FAA stated that it would consider rulemaking to include definitions for “aerial work” and “aerial photography” in 14 *CFR* 1.1. The FAA indicated that another means for achieving the intent of the recommendation would be to provide guidance to the aviation inspector workforce to strengthen aerial work oversight. On September 28, 2020, the NTSB classified Safety Recommendation A-19-29 “Open—Acceptable Response” pending additional FAA information about the definitions of both terms.

operations that include, but are not limited to, air combat/extreme aerobatic experience flights and tour flights operating as student instruction, nonstop commercial air tour flights operating as aerial photography flights, and glider sightseeing flights; after these shortcomings are identified, use that information to add other types of flight operations to the national safety standards, or equivalent regulations, requested in Safety Recommendation A-21-9.

### 2.3 Need for Increased Federal Aviation Administration Oversight

Part 91 revenue passenger-carrying operators are not subject to the same level of FAA oversight and surveillance as Part 135 operators. Specifically, for Part 135 operations, FAA inspectors are responsible for routine and scheduled oversight of operating certificates, operations specifications, general operations manuals, training programs, and maintenance programs according to the guidance in Order 8900.1. This type of oversight does not occur during ramp inspections—the FAA’s method of oversight for Part 91 operations. Ramp inspections of revenue passenger-carrying operations provide the same level of surveillance as that for any Part 91 general aviation operation, and, as found during the New York investigation, Part 91 general aviation operations are not a priority for FAA surveillance or inspection.

The Lockhart, New York, Mokuleia, and Windsor Locks accidents demonstrated that the level of FAA oversight for Part 91 revenue passenger-carrying operations is insufficient to identify and correct safety deficiencies that could expose passengers to unacceptable safety risks.<sup>64</sup> The NTSB issued Safety Recommendation A-19-30, which asked the FAA to provide guidance to its inspectors so that they could pursue more comprehensive oversight of Part 91 operations conducted under any of the 14 *CFR* 119.1(e) exceptions, identify potential hazards, and ensure that the operators were appropriately managing the associated risks.

The FAA responded that it was evaluating accident reports from 2009 to 2019 involving air tour flights operated under Part 91 or Part 135 to determine the need for the recommended policy revisions. The FAA also revised Order 1800.56, National Flight Standards Work Program Guidelines, to require that inspectors conduct additional oversight for Part 91 air tour operators.

In September 2020, the NTSB classified Safety Recommendation A-19-30 “Open—Acceptable Response” because of the revisions to Order 1800.56. However, the safety recommendation was intended to provide guidance to FAA inspectors of Part 91 operations conducted under a 14 *CFR* 119.1(e) exception regarding how to identify potential hazards and ensure that operators are appropriately managing the associated risks. Similar action is warranted

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<sup>64</sup> Also, the FAA provides limited oversight for Part 61 operations; this is noteworthy because the investigation of the Four Corners accident found that Sky Combat Ace, which was conducting its operations as a Part 61 flight training provider, was involved in four accidents in the 3 years before the October 2017 accident discussed in this report. Because Part 61 contains no provision for an operating certificate, the FAA could not take unilateral action against Sky Combat Ace and, according to FAA Order 2150.3C, FAA Compliance and Enforcement Program, was instead limited to issuing civil penalties. In addition, during the Honolulu accident, the NTSB found that the operator was using a “mechanic’s assistant” to perform maintenance, but, because of a lack of oversight, the FAA did not know that a noncertificated mechanic was doing the work.



for Part 91 operations conducted under any of the LHFE exemptions given the findings from the Windsor Locks accident investigation regarding the lack of FAA oversight.

The NTSB concludes that the FAA's oversight and surveillance of Part 91 revenue passenger-carrying operations do not ensure that these operators are properly maintaining their aircraft and safely conducting operations. It is critical for FAA inspectors to have the necessary resources to pursue comprehensive oversight of flights that are currently conducted under the 14 *CFR* 119.1(e) exceptions. Therefore, the NTSB reiterates Safety Recommendation A-19-30.

As stated in section 1.3.3, FAA Notice N 8900.568 instructed inspectors to perform increased surveillance of all LHFE operators within their FSDO's jurisdiction by performing an audit of the LHFE operators by December 31, 2021. The audit is intended to "ensure compliance with regulations, the C/Ls [conditions and limitations] of the exemptions, and manual systems." Although the FAA indicated that it would incorporate this information into Order 8900.1, the NTSB notes that the audit would not ensure that hazards and risks associated with LHFE operations were being appropriately managed. Thus, the NTSB recommends that the FAA revise Order 8900.1 to include guidance for inspectors who oversee operations conducted under any of the LHFE exemptions to identify potential hazards and ensure that operators are appropriately managing the associated risks.

The NTSB's investigation of the Lockhart accident found that the FAA's primary method of oversight for balloon operations was to inspect a sample of balloon operators that attended balloon festivals. Only a small percentage of balloon surveillance occurred where an individual balloon operator was located.

The NTSB expressed concern about the FAA's primary oversight method for balloon operations because not all balloon operators attend balloon festivals. The NTSB concluded that this oversight method did not target those operations that posed the most significant safety risks to members of the public who participate in commercial balloon sightseeing activities. As a result, on October 31, 2017, the NTSB issued Safety Recommendation A-17-45 to the FAA, which recommended the following:

Analyze your current policies, procedures, and tools for conducting oversight of commercial balloon operations in accordance with your Integrated Oversight Philosophy, taking into account the findings of this accident; based on this analysis, develop and implement more effective ways to target oversight of the operators and operations that pose the most significant safety risks to the public.

On August 2, 2018, the FAA stated that it planned to develop and implement more effective ways to target oversight of operators that pose the most significant safety risk to the public. The FAA also stated that it would "first identify operators of balloons 140,000 cubic feet or larger" and then would increase surveillance of those operators. In addition, the FAA stated that it would provide an update, by May 31, 2019, about the FAA's progress regarding this safety recommendation. On September 18, 2018, the NTSB asked the FAA to provide information regarding how it determined the 140,000-cubic ft threshold for increased oversight and classified Safety Recommendation A-17-45 "Open—Acceptable Response." However, as of March 1, 2021,

the NTSB had not received an update from the FAA about its progress in implementing the recommended actions.

Given that more than 2.5 years have passed since the FAA's correspondence about Safety Recommendation A-17-45 as well as the FAA's lack of action in response to the safety recommendation, the NTSB reiterates Safety Recommendation A-17-45 and classifies it "Open—Unacceptable Response."

In its February 2007 final rule on national air tour safety standards, the FAA recognized that it lacked oversight for some Part 91 commercial air tour operators. The final rule introduced an LOA requirement that would allow the FAA to compile a database with basic information about each Part 91 air tour operator. The FAA stated, "through the LOA [database], we will now have geographic oversight of operations on which we previously did not have information."

LOAs are only required for Part 91 air tour operators, and it is important for the FAA to have oversight of other revenue passenger-carrying operations currently conducted under Part 91. One way for the FAA to have awareness of each revenue passenger-carrying operation is through a national database of these operators. Such a database could allow the FAA to track each operator and ensure the safety of the passengers who pay for the services that the operator offers.

The NTSB concludes that the lack of a national database for revenue passenger-carrying operations currently conducted under Part 91 precludes the FAA from ensuring that its inspectors are overseeing all of these operators. Therefore, the NTSB recommends that the FAA develop and continuously update a database that includes all of the revenue passenger-carrying operators addressed in Safety Recommendations A-21-9 and -10 to facilitate oversight of these operations.

## 2.4 Need for Safety Management Systems

The NTSB's investigations of the Mokuleia and New York accidents found that organizational safety management failures played a role in those accidents. An effective means for managing and mitigating risks in an aviation operation is through the use of an SMS. The FAA described SMS as a "formal, top-down business-like approach to managing safety risk."<sup>65</sup> The four components of an SMS are safety policy, safety risk management, safety assurance, and safety promotion. Only Part 121 air carriers are currently required to incorporate SMS, but the FAA has encouraged the voluntary implementation of SMS beyond Part 121 operations.

FAA Advisory Circular (AC) 120-92B, Safety Management Systems for Aviation Service Providers (dated January 8, 2015), described the regulatory requirements, guidance, and methods for developing and implementing an SMS for Part 121 air carriers. However, according to the FAA, the AC could also be used by other operators that were interested in voluntarily implementing an SMS based on the requirements in 14 *CFR* Part 5. The AC stated that SMS requirements were designed to be scalable to allow operators to integrate safety management practices that could be tailored to their specific operation. Although a larger operator and a smaller operator would both need the same four components to have a functioning SMS, the level of

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<sup>65</sup> For more information, see "[Safety Management System: Frequently Asked Questions](#)."

sophistication in how some of those components were implemented would likely differ depending on the size and complexity of the operation.

The NTSB has found that operators other than Part 121 air carriers could benefit from an SMS. For example, in our report on the November 10, 2015, accident involving a British Aerospace HS 125-700A that departed controlled flight while on an instrument approach to Akron Fulton International Airport, Akron, Ohio, the NTSB found that the operator of the flight, which was conducted under Part 135, lacked an SMS (NTSB 2016). The NTSB concluded that all Part 135 operators could benefit from an SMS because formal system safety methods would be incorporated into internal oversight programs.<sup>66</sup>

As a result of the Akron investigation, on November 3, 2016, the NTSB recommended that the FAA “require all 14 *Code of Federal Regulations* Part 135 operators to establish safety management system programs” (Safety Recommendation A-16-36). The NTSB has reiterated this safety recommendation five times since it was issued (NTSB 2017, NTSB 2018, NTSB 2019, NTSB 2020, NTSB 2021).<sup>67</sup>

On January 9, 2017, the FAA responded to Safety Recommendation A-16-36 by stating that Part 135 operators could participate in a formal voluntary SMS and that the agency intended to conduct a review and hold meetings to determine if further action was needed. The FAA did not provide another update about its progress in addressing this safety recommendation for 3 years, even though the recommendation had been reiterated three times by that point. The FAA’s April 13, 2020, response indicated that the agency was still evaluating the feasibility of rulemaking to implement the recommended action.

As a result of the delays with this and several other rulemaking projects addressing NTSB safety recommendations (as well as the impact of executive orders requiring the removal of two regulations for every new regulation implemented), the FAA was considering potential alternate actions to address Safety Recommendation A-16-36. However, because the FAA had not taken any further action to satisfy this safety recommendation, it was classified “Open—Unacceptable Response” on June 8, 2020 (when the recommendation was reiterated for the fourth time).<sup>68</sup>

On October 27, 2020, during his speech at the FAA’s Rotorcraft Safety Conference, the FAA Administrator said that the FAA was targeting spring 2022 for publishing a proposed SMS rule that would apply to air taxis, air tour operators, and others (FAA 2020). In addition, the NTSB is aware that the Office of Management and Budget’s Fall 2020 Unified Agenda of Regulatory and Deregulatory Actions (published December 9, 2020) listed “Safety Management System

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<sup>66</sup> The report referenced three other accidents involving Part 135 operators that could have benefited from an SMS.

<sup>67</sup> In addition, Safety Recommendation A-16-36 appeared on the NTSB’s 2019-2020 Most Wanted List of Transportation Safety Improvements under the issue area of “Improve the Safety of Part 135 Operations.”

<sup>68</sup> In a September 29, 2020, letter to the FAA, the NTSB expressed concern that, during the 3 years since the FAA had last responded to Safety Recommendation A-16-36, the FAA was “still evaluating the feasibility” of requiring SMS for Part 135 operators.

(SMS) for Parts 21, 91, 135, and 145” as a “long-term action” item (Office of Management and Budget 2020).<sup>69</sup>

As part of the New York investigation, the NTSB found that the safety of commercial air tour operations would be enhanced if all air tour operators established an SMS. Because Safety Recommendation A-16-36 did not apply to Part 91 commercial air tour operators, the NTSB recommended that the FAA “require all commercial air tour operators, regardless of their operating rule, to implement a safety management system” (Safety Recommendation A-19-28).<sup>70</sup>

On April 6, 2020, the FAA responded to this safety recommendation by stating that it would consider rulemaking to require that all commercial air tour operators implement an SMS. On September 28, 2020, the NTSB classified this safety recommendation “Open—Acceptable Response” pending additional details about the FAA’s plan for developing this rulemaking.

Safety Recommendation A-19-28 recognized that Part 91 commercial air tour operators could benefit from an SMS. Other Part 91 revenue passenger-carrying operators could also benefit from an SMS to ensure that operational risks are sufficiently mitigated. To demonstrate the scalability of SMS, the FAA released a video that described a process for SMS implementation at small aviation service providers. The video referenced a speech from a former FAA administrator, who stated that “no company is too small for an SMS” (FAA 2013). The NTSB concludes that the implementation of an SMS for all revenue passenger-carrying operators currently operating under Part 91 would help company managers, pilots, and other employees identify and mitigate risks and promote the safety of these operations.

As previously stated, during fall 2020, “Safety Management System (SMS) for Parts 21, 91, 135, and 145” was included in the Office of Management and Budget’s Unified Agenda of Regulatory and Deregulatory Actions. Thus, the FAA appears to be considering the possibility of requiring SMS for operations currently conducted under Part 91. Nevertheless, because the FAA has not yet proceeded with this rulemaking, the NTSB recommends that the FAA require SMS for the revenue passenger-carrying operations addressed in Safety Recommendations A-21-9 and -10. In addition, the NTSB reiterates Safety Recommendation A-19-28.

The NTSB’s investigation of the Windsor Locks accident found that, according to the FAA’s LHFE policy, the Collings Foundation was required to have a plan to mitigate risks that followed safety risk management principles. The Collings Foundation had implemented an SMS, which would have met the FAA’s LHFE policy requirement, but the SMS was not effective and did not function as a safety and risk management program (which was required by the FAA’s letter granting the foundation’s LHFE exemption).<sup>71</sup> Specifically, the SMS safety officer, who was responsible for managing the Collings Foundation’s SMS, was a part-time volunteer pilot and, as

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<sup>69</sup> According to the Regulatory Information Service Center (which publishes the unified agenda), “long-term action” refers to an item that is under development, with regulatory action not expected within 12 months.

<sup>70</sup> In addition, given the organizational safety management failures that played a role in the accident, the NTSB recommended that Liberty Helicopters and NYONair each establish an SMS (A-19-36 and -38, respectively). Both recommendations were classified “Open—Await Response” as of March 1, 2021.

<sup>71</sup> Title 14 *CFR* 5.5 defines safety risk management as “a process within the SMS composed of describing the system, identifying the hazards, and analyzing, assessing and controlling risk.”

such, interacted with the foundation's management and personnel on a sporadic basis only. Also, the Collings Foundation pilots who were interviewed after the accident indicated that, although they discussed safety issues that arose with the chief pilot, they did not submit a safety report to SMS.<sup>72</sup> In addition, the SMS did not detect and appropriately manage the risks associated with safety issues related to the pilot's inadequate maintenance of the airplane while it was on tour.

Even though the Collings Foundation was not specifically required to have an SMS, the foundation was required to have an SMS manual and to provide it to the FAA's Orlando FSDO. However, the manual was not a regulatory or an approved document, and the FSDO did not review the manual and the safety reports submitted to SMS.

Order 8900.1, volume 17, chapter 1, section 1, Safety Management System—Overview, provided guidance about the acceptance and continued oversight of SMS, as required by Part 5 (for Part 121 operators) and the SMS Voluntary Program (SMSVP) standard (which was based on the Part 5 requirements for consistency). Volume 17, chapter 3, Safety Management System Voluntary Program, provided, in section 1, guidance for FAA personnel to evaluate the SMS of certificate holders that participate in the SMSVP. The guidance was "expected to be used by the responsible Flight Standards offices whose certificate holders have requested FAA recognition of their SMSs." In addition, volume 17, chapter 3, section 3 stated that the FAA "is expected to provide ongoing surveillance support to validate a certificate holder's conformance to the SMSVP Standard."

Although the Collings Foundation had voluntarily implemented an SMS, the available evidence from the Windsor Locks investigation did not indicate whether the foundation had requested FAA acceptance of its SMS. Nevertheless, the Collings Foundation's SMS did not receive oversight from the Orlando FSDO. Such oversight could have ensured alignment with the FAA's SMSVP standard and the implementation of mitigations that could trap hazards.

The NTSB concludes that FAA oversight of a revenue passenger-carrying operator's SMS would help ensure that the system is adequately identifying and appropriately mitigating safety risks. The NTSB's review of data as part of its investigation of the January 26, 2020, Sikorsky S-76B helicopter accident in Calabasas, California, found that, of the 1,940 certificate holders authorized to conduct Part 135 operations, only 17 had an FAA-accepted SMS and that 158 other certificate holders had applied for FAA acceptance (NTSB 2021). These data demonstrate the importance of requiring SMS beyond Part 121 rather than continuing to allow the voluntary adoption of SMS for Part 91 and 135 operators. Therefore, the NTSB recommends that the FAA, for the revenue passenger-carrying operations addressed in Safety Recommendations A-21-9 and -10, provide ongoing oversight of each operator's SMS once established.

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<sup>72</sup> Of the 33 reports that were submitted to SMS between May 2017 and January 2020, 2 reports pertained to safety issues involving the B-17G (passengers moving during taxi operations and a cowling panel that departed the airplane).

### 3. Findings

1. The Federal Aviation Administration has a responsibility to bolster regulations and oversight for all revenue passenger-carrying operations currently conducted under Title 14 *Code of Federal Regulations* Part 91 to ensure an increased level of safety for those participants who pay for these flights.
2. Some operators have been exploiting and/or inappropriately capitalizing on the exceptions contained in Title 14 *Code of Federal Regulations* 119.1(e) to avoid the additional requirements and oversight intended to apply to the types of revenue passenger-carrying operations being conducted.
3. Because of a regulatory omission, commercial glider sightseeing flights have essentially been operating with almost no oversight.
4. The Federal Aviation Administration's oversight and surveillance of Title 14 *Code of Federal Regulations* Part 91 revenue passenger-carrying operations do not ensure that these operators are properly maintaining their aircraft and safely conducting operations.
5. The lack of a national database for revenue passenger-carrying operations currently conducted under Title 14 *Code of Federal Regulations* Part 91 precludes the Federal Aviation Administration from ensuring that its inspectors are overseeing all of these operators.
6. The implementation of a safety management system for all revenue passenger-carrying operators currently operating under Title 14 *Code of Federal Regulations* Part 91 would help company managers, pilots, and other employees identify and mitigate risks and promote the safety of these operations.
7. Federal Aviation Administration oversight of a revenue passenger-carrying operator's safety management system would help ensure that the system is adequately identifying and appropriately mitigating safety risks.

## 4. Recommendations

### 4.1 New Recommendations

As a result of this investigation, the National Transportation Safety Board makes the following new safety recommendations.

#### **To the Federal Aviation Administration:**

Develop national safety standards, or equivalent regulations, for revenue passenger-carrying operations that are currently conducted under Title 14 *Code of Federal Regulations* Part 91, including, but not limited to, sightseeing flights conducted in a hot air balloon, intentional parachute jump flights, and living history flight experience and other vintage aircraft flights. These standards, or equivalent regulations, should include, at a minimum for each operation type, requirements for initial and recurrent training and maintenance and management policies and procedures. (A-21-9)

Identify shortcomings in Title 14 *Code of Federal Regulations* 119.1(e) that would allow revenue passenger-carrying operators to avoid stricter regulations and oversight in operations that include, but are not limited to, air combat/extreme aerobatic experience flights and tour flights operating as student instruction, nonstop commercial air tour flights operating as aerial photography flights, and glider sightseeing flights; after these shortcomings are identified, use that information to add other types of flight operations to the national safety standards, or equivalent regulations, requested in Safety Recommendation A-21-9. (A-21-10)

Revise Federal Aviation Administration Order 8900.1, Flight Standards Information Management System, to include guidance for inspectors who oversee operations conducted under any of the living history flight experience exemptions to identify potential hazards and ensure that operators are appropriately managing the associated risks. (A-21-11)

Develop and continuously update a database that includes all of the revenue passenger-carrying operators addressed in Safety Recommendations A-21-9 and -10 to facilitate oversight of these operations. (A-21-12)

Require safety management systems for the revenue passenger-carrying operations addressed in Safety Recommendations A-21-9 and -10. (A-21-13)

For the revenue passenger-carrying operations addressed in Safety Recommendations A-21-9 and -10, provide ongoing oversight of each operator's safety management system once established. (A-21-14)

## 4.2 Previously Issued Recommendations Reiterated in This Report

The National Transportation Safety Board reiterates the following safety recommendations.

### To the Federal Aviation Administration:

Require all commercial air tour operators, regardless of their operating rule, to implement a safety management system. (A-19-28)

Revise Order 8900.1, Flight Standards Information Management System, to include guidance for inspectors who oversee Title 14 *Code of Federal Regulations (CFR)* Part 91 operations conducted under any of the 14 *CFR* 119.1(e) exceptions to identify potential hazards and ensure that operators are appropriately managing the associated risks. (A-19-30)

## 4.3 Previously Issued Recommendations Reiterated and Classified in This Report

The National Transportation Safety Board reiterates and classifies the following safety recommendations.

### To the Federal Aviation Administration:

Analyze your current policies, procedures, and tools for conducting oversight of commercial balloon operations in accordance with your Integrated Oversight Philosophy, taking into account the findings of this accident; based on this analysis, develop and implement more effective ways to target oversight of the operators and operations that pose the most significant safety risks to the public. (A-17-45)

Safety Recommendation A-17-45 is classified “Open—Unacceptable Response” in section 2.3 of this report.

Develop and implement national standards within Title 14 *Code of Federal Regulations (CFR)* Part 135, or equivalent regulations, for all air tour operations with powered airplanes and rotorcraft to bring them under one set of standards with operations specifications, and eliminate the exception currently contained in 14 *CFR* 135.1. (A-19-31)

Safety Recommendation A-19-31 is classified “Open—Unacceptable Response” in section 2.1 of this report.



**BY THE NATIONAL TRANSPORTATION SAFETY BOARD**

**ROBERT L. SUMWALT**  
Chairman

**JENNIFER HOMENDY**  
Member

**BRUCE LANDSBERG**  
Vice Chairman

**MICHAEL GRAHAM**  
Member

**THOMAS B. CHAPMAN**  
Member

**Report Date: March 23, 2021**

## 5. Appendixes

### Appendix A: Relevant Part 91 and 119 Regulations

This appendix presents sections of the Title 14 *Code of Federal Regulations (CFR)* Part 91 and 119 regulations that apply to the revenue passenger-carrying operations discussed in this report. Part 91 addresses General Operating and Flight Rules, and Part 119 addresses Certification: Air Carriers and Commercial Operators. Five of these regulations—14 *CFR* 91.9, 91.315, 91.319(a), 119.5(g), and 119.21(a)—were part of the living history flight experience exemption that the Federal Aviation Administration (FAA) granted to the Collings Foundation, the operator of the B-17G accident airplane discussed in this report.

#### **14 *CFR* 91.147, Passenger Carrying Flights for Compensation or Hire**

Each Operator conducting passenger-carrying flights for compensation or hire must meet the following requirements unless all flights are conducted under §91.146.

(a) For the purposes of this section and for drug and alcohol testing, *Operator* means any person conducting nonstop passenger-carrying flights in an airplane or helicopter for compensation or hire in accordance with §§119.1(e)(2), 135.1(a)(5), or 121.1(d), of this chapter that begin and end at the same airport and are conducted within a 25-statute mile radius of that airport.

(b) An Operator must comply with the safety provisions of part 136, subpart A of this chapter, and apply for and receive a Letter of Authorization from the Flight Standards District Office nearest to its principal place of business by September 11, 2007.

(c) Each application for a Letter of Authorization must include the following information: (1) Name of Operator, agent, and any d/b/a (doing-business-as) under which that Operator does business; (2) Principal business address and mailing address; (3) Principal place of business (if different from business address); (4) Name of person responsible for management of the business; (5) Name of person responsible for aircraft maintenance; (6) Type of aircraft, registration number(s), and make/model/series; and (7) An Antidrug and Alcohol Misuse Prevention Program registration.

(d) The Operator must register and implement its drug and alcohol testing programs in accordance with part 120 of this chapter.

(e) The Operator must comply with the provisions of the Letter of Authorization received.

#### **14 *CFR* 119.1(e), Applicability**

Except for operations when common carriage is not involved conducted with airplanes having a passenger-seat configuration of 20 seats or more, excluding any

required crewmember seat, or a payload capacity of 6,000 pounds or more, this part does not apply to—

- (1) Student instruction;
- (2) Nonstop Commercial Air Tours conducted after September 11, 2007, in an airplane or helicopter having a standard airworthiness certificate and passenger-seat configuration of 30 seats or fewer and a maximum payload capacity of 7,500 pounds or less that begin and end at the same airport, and are conducted within a 25-statute mile radius of that airport, in compliance with the Letter of Authorization issued under §91.147 of this chapter. For nonstop Commercial Air Tours conducted in accordance with part 136, subpart B of this chapter, National Parks Air Tour Management, the requirements of part 119 of this chapter apply unless excepted in §136.37(g)(2). For Nonstop Commercial Air Tours conducted in the vicinity of the Grand Canyon National Park, Arizona, the requirements of SFAR [Special Federal Aviation Regulation] 50-2, part 93, subpart U, and part 119 of this chapter, as applicable, apply.
- (3) Ferry or training flights;
- (4) Aerial work operations, including—(i) Crop dusting, seeding, spraying, and bird chasing; (ii) Banner towing; (iii) Aerial photography or survey; (iv) Fire fighting; (v) Helicopter operations in construction or repair work (but it does apply to transportation to and from the site of operations); and (vi) Powerline or pipeline patrol;
- (5) Sightseeing flights conducted in hot air balloons;
- (6) Nonstop flights conducted within a 25-statute-mile radius of the airport of takeoff carrying persons or objects for the purpose of conducting intentional parachute operations.
- (7) Helicopter flights conducted within a 25 statute mile radius of the airport of takeoff if—(i) Not more than two passengers are carried in the helicopter in addition to the required flightcrew; (ii) Each flight is made under day VFR [visual flight rules] conditions; (iii) The helicopter used is certificated in the standard category and complies with the 100-hour inspection requirements of part 91 of this chapter; (iv) The operator notifies the responsible Flight Standards office at least 72 hours before each flight and furnishes any essential information that the office requests; (v) The number of flights does not exceed a total of six in any calendar year; (vi) Each flight has been approved by the Administrator; and (vii) Cargo is not carried in or on the helicopter;
- (8) Operations conducted under part 133 of this chapter or 375 of this title;
- (9) Emergency mail service conducted under 49 U.S.C. 41906;
- (10) Operations conducted under the provisions of §91.321 of this chapter; or

(11) Small UAS [unmanned aircraft system] operations conducted under part 107 of this chapter.

#### **14 *CFR* 91.9, Civil Aircraft Flight Manual, Marking, and Placard Requirements**

(a) Except as provided in paragraph (d) of this section, no person may operate a civil aircraft without complying with the operating limitations specified in the approved Airplane or Rotorcraft Flight Manual, markings, and placards, or as otherwise prescribed by the certificating authority of the country of registry.

(b) No person may operate a U.S.-registered civil aircraft— (1) For which an Airplane or Rotorcraft Flight Manual is required by §21.5 of this chapter unless there is available in the aircraft a current, approved Airplane or Rotorcraft Flight Manual or the manual provided for in §121.141(b); and (2) For which an Airplane or Rotorcraft Flight Manual is not required by §21.5 of this chapter, unless there is available in the aircraft a current approved Airplane or Rotorcraft Flight Manual, approved manual material, markings, and placards, or any combination thereof.

(c) No person may operate a U.S.-registered civil aircraft unless that aircraft is identified in accordance with part 45 of this chapter.

(d) Any person taking off or landing a helicopter certificated under part 29 of this chapter at a heliport constructed over water may make such momentary flight as is necessary for takeoff or landing through the prohibited range of the limiting height-speed envelope established for the helicopter if that flight through the prohibited range takes place over water on which a safe ditching can be accomplished and if the helicopter is amphibious or is equipped with floats or other emergency flotation gear adequate to accomplish a safe emergency ditching on open water.

#### **14 *CFR* 91.315, Limited Category Civil Aircraft: Operating Limitations**

No person may operate a limited category civil aircraft carrying persons or property for compensation or hire.

#### **14 *CFR* 91.319(a), Aircraft Having Experimental Certificates: Operating Limitations**

No person may operate an aircraft that has an experimental certificate—(1) For other than the purpose for which the certificate was issued; or (2) Carrying persons or property for compensation or hire.

#### **14 *CFR* 119.5(g), Certifications, Authorizations, and Prohibitions**

No person may operate as a direct air carrier or as a commercial operator without, or in violation of, an appropriate certificate and appropriate operations specifications. No person may operate as a direct air carrier or as a commercial operator in violation of any deviation or exemption authority, if issued to that person or that person's representative.

**14 *CFR* 119.21(a), Commercial Operators Engaged in Intrastate Common Carriage and Direct Air Carriers**

Each person who conducts airplane operations as a commercial operator engaged in intrastate common carriage of persons or property for compensation or hire in air commerce, or as a direct air carrier, shall comply with the certification and operations specifications requirements in subpart C of this part, and shall conduct its:

(1) Domestic operations in accordance with the applicable requirements of part 121 of this chapter, and shall be issued operations specifications for those operations in accordance with those requirements. However, based on a showing of safety in air commerce, the Administrator may permit persons who conduct domestic operations between any point located within any of the following Alaskan islands and any point in the State of Alaska to comply with the requirements applicable to flag operations contained in subpart U of part 121 of this chapter: (i) The Aleutian Islands. (ii) The Pribilof Islands. (iii) The Shumagin Islands.

(2) Flag operations in accordance with the applicable requirements of part 121 of this chapter, and shall be issued operations specifications for those operations in accordance with those requirements.

(3) Supplemental operations in accordance with the applicable requirements of part 121 of this chapter, and shall be issued operations specifications for those operations in accordance with those requirements. However, based on a determination of safety in air commerce, the Administrator may authorize or require those operations to be conducted under paragraph (a)(1) or (a)(2) of this section.

(4) Commuter operations in accordance with the applicable requirements of part 135 of this chapter, and shall be issued operations specifications for those operations in accordance with those requirements.

(5) On-demand operations in accordance with the applicable requirements of part 135 of this chapter, and shall be issued operations specifications for those operations in accordance with those requirements.

## Appendix B: Consolidated Recommendation Information

Title 49 *United States Code (USC)* 1117(b) requires the following information about the recommendations in this report:

For each recommendation—

- (1) a brief summary of the Board's collection and analysis of the specific accident investigation information most relevant to the recommendation;
- (2) a description of the Board's use of external information, including studies, reports, and experts, other than the findings of a specific accident investigation, if any were used to inform or support the recommendation, including a brief summary of the specific safety benefits and other effects identified by each study, report, or expert; and
- (3) a brief summary of any examples of actions taken by regulated entities before the publication of the safety recommendation, to the extent such actions are known to the Board, that were consistent with the recommendation.

### To the Federal Aviation Administration:

#### A-21-9

Develop national safety standards, or equivalent regulations, for revenue passenger-carrying operations that are currently conducted under Title 14 *Code of Federal Regulations* Part 91, including, but not limited to, sightseeing flights conducted in a hot air balloon, intentional parachute jump flights, and living history flight experience and other vintage aircraft flights. These standards, or equivalent regulations, should include, at a minimum for each operation type, requirements for initial and recurrent training and maintenance and management policies and procedures.

Information that addresses the requirements of 49 *USC* 1117(b), as applicable, can be found in section 2.1, Need for Appropriate Framework for Part 91 Revenue Passenger-Carrying Operations. Information supporting (b)(1) can be found on pages 25–26, (b)(2) is not applicable, and (b)(3) can be found on pages 25–26.

#### A-21-10

Identify shortcomings in Title 14 *Code of Federal Regulations* 119.1(e) that would allow revenue passenger-carrying operators to avoid stricter regulations and oversight in operations that include, but are not limited to, air combat/extreme aerobatic experience flights and tour flights operating as student instruction, nonstop commercial air tour flights operating as aerial photography flights, and glider sightseeing flights; after these shortcomings are identified, use that information to add other types of flight operations to the national safety standards, or equivalent regulations, requested in Safety Recommendation A-21-9.

Information that addresses the requirements of 49 *USC* 1117(b), as applicable, can be found in section 2.2, Need to Address Regulatory Loopholes and Omissions. Information supporting (b)(1) can be found on pages 26–28; (b)(2) and (b)(3) are not applicable.

**A-21-11**

Revise Federal Aviation Administration Order 8900.1, Flight Standards Information Management System, to include guidance for inspectors who oversee operations conducted under any of the living history flight experience exemptions to identify potential hazards and ensure that operators are appropriately managing the associated risks.

Information that addresses the requirements of 49 *USC* 1117(b), as applicable, can be found in section 2.3, Need for Increased Federal Aviation Administration Oversight. Information supporting (b)(1) can be found on pages 29–30, (b)(2) is not applicable, and (b)(3) can be found on pages 29–30.

**A-21-12**

Develop and continuously update a database that includes all of the revenue passenger-carrying operators addressed in Safety Recommendations A-21-9 and -10 to facilitate oversight of these operations.

Information that addresses the requirements of 49 *USC* 1117(b), as applicable, can be found in section 2.3, Need for Increased Federal Aviation Administration Oversight. Information supporting (b)(1) can be found on page 31; (b)(2) and (b)(3) are not applicable.

**A-21-13**

Require safety management systems for the revenue passenger-carrying operations addressed in Safety Recommendations A-21-9 and -10.

Information that addresses the requirements of 49 *USC* 1117(b), as applicable, can be found in section 2.4, Need for Safety Management Systems. Information supporting (b)(1) can be found on pages 31–33, (b)(2) is not applicable, and (b)(3) can be found on page 33.

**A-21-14**

For the revenue passenger-carrying operations addressed in Safety Recommendations A-21-9 and -10, provide ongoing oversight of each operator's safety management system once established.

Information that addresses the requirements of 49 *USC* 1117(b), as applicable, can be found in section 2.4, Need for Safety Management Systems. Information supporting (b)(1) can be found on pages 34–35, (b)(2) is not applicable, and (b)(3) can be found on pages 34–35.

## Appendix C: Previous Safety Recommendations

This appendix discusses some of the National Transportation Safety Board's (NTSB) previous recommendations to show our longstanding concerns about the safety of commercial air tour and parachute jump operations that are allowed to operate under Title 14 *Code of Federal Regulations (CFR)* Part 91 because of the 14 *CFR* 119.1(e) exceptions. For more information about these safety recommendations and their classifications, see the [Case Analysis and Reporting Online](#) database at the NTSB's website.

### A-95-57 and -58

In June 1995, the NTSB issued a special investigation report about the safety of the US air tour industry (NTSB 1995). The report considered the 139 air tour accidents and incidents that the NTSB investigated between October 1988 and April 1995. The report discussed, among other things, the adequacy of regulations pertaining to the air tour industry and the effectiveness of FAA oversight and certification of air tour operators. The NTSB had issued several related safety recommendations in the years preceding the study, but most of the requested actions were site specific and only partially addressed the NTSB's concerns. Among the 11 new recommendations that the NTSB issued were the following:

#### To the Department of Transportation (DOT):

Establish and maintain a data base of all air tour operators that would provide data for use in determining the scope of air tour operations and accident rates that can be used to assess the safety of the air tour industry. (A-95-57)

#### To the FAA:<sup>1</sup>

Develop and implement national standards by December 31, 1995, within 14 *CFR* Part 135, or equivalent regulations, for all air tour operators with powered airplanes and rotorcraft to bring them under one set of standards with operations specifications and eliminate the exception currently contained in 14 *CFR* Part 135.1. (A-95-58)<sup>[2]</sup>

Regarding Safety Recommendation A-95-57, on July 14, 1999, the NTSB stated that it received "no significant response" from the DOT since the time that the recommendation was issued. The NTSB noted that, although the DOT had proposed a project to address the recommendation, the lack of firm action for the project and the uncertainty associated with project funding were unacceptable. As a result, the NTSB classified this safety recommendation "Closed—Unacceptable Action."

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<sup>1</sup> Safety Recommendations A-95-58 through -65 superseded A-93-8 through -10, which superseded A-87-91 and -93.

<sup>2</sup> As stated in section 2.1, 14 *CFR* 135.1(a)(5), states that nonstop commercial air tour flights conducted in accordance with 14 *CFR* 119.1(e)(2) are excepted from the requirements of Part 135 provided that these operations comply with drug and alcohol testing requirements and the provisions of Part 136 subpart A and 14 *CFR* 91.147.



Regarding Safety Recommendation A-95-58, on November 21, 2007, the NTSB stated that the FAA's 2007 final rule continued to allow air tour flights that departed and returned to the same airport and stayed within a 25-mile radius of the airport to be operated under Part 91. The NTSB recognized that the final rule required Part 91 air tour operators to obtain a letter of authorization (LOA) but that LOAs "will be limited in their ability to subject air tour operators to requirements similar to operations specifications for Part 135 carriers." As a result, the NTSB classified this safety recommendation "Closed—Unacceptable Action."

#### **A-07-24**

On February 13, 2007, the NTSB adopted its report on the September 24, 2004, accident involving a Bell 206B helicopter that impacted mountainous terrain in Kalaheo, Hawaii (NTSB 2007). The pilot and the four passengers sustained fatal injuries, and the helicopter was destroyed by impact forces and postcrash fire. The helicopter was operated by Bali Hai Helicopter Tours, Inc. as a Part 91 nonstop sightseeing air tour flight.

The safety issues discussed in this report included the influence of pilot experience on in-flight decision-making, the lack of FAA oversight of Part 91 air tour operators, the need for national air tour safety standards, and the lack of direct FAA surveillance of commercial air tour operators in Hawaii. Among the nine safety recommendations that the NTSB issued to the FAA was the following:

Develop and enforce safety standards for all commercial air tour operations that include, at a minimum, initial and recurrent pilot training programs that address local geography and meteorological hazards and special airspace restrictions; maintenance policies and procedures; flight scheduling that fosters adequate breaks and flight periods, as established by the implementation of Safety Recommendation A-07-20; and operations specifications that address management, procedures, route specifications, and altitude restrictions, as necessary. (A-07-24)<sup>3</sup>

On May 18, 2012, the FAA stated, "we are not considering additional regulatory restrictions at this time." On September 13, 2012, the NTSB stated that it continued to believe that "a regulation specific to commercial air tour operations that establishes safety standards in the areas recommended is needed and would allow FAA inspectors responsible for air tour operators to focus on the daily safety requirements unique to those operations." As a result, the NTSB classified Safety Recommendation A-07-24 "Closed—Unacceptable Action."

#### **A-08-63, -65, and -66**

In September 2008, the NTSB issued a special investigation report about the safety of parachute jump operations (NTSB 2008). The report detailed the results of the NTSB's review of 32 accidents between 1980 and 2008 involving these operations. The report identified inadequate

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<sup>3</sup> Safety Recommendation A-07-20 asked the FAA to "establish operational practices for commercial air tour helicopter pilots that include rest breaks and that will ensure acceptable pilot performance and safety and require commercial air tour helicopter operators to adhere to these practices." The NTSB classified this recommendation "Closed—Unacceptable Action" on April 23, 2014.

aircraft inspection and maintenance, pilot performance deficiencies in basic airmanship tasks, and inadequate FAA oversight of parachute jump operations as recurring safety issues. Among the six new safety recommendations that the NTSB issued to the FAA were the following:<sup>4</sup>

Require parachute jump operators to develop and implement Federal Aviation Administration-approved aircraft maintenance and inspection programs that include, at a minimum, requirements for compliance with engine manufacturers' recommended maintenance instructions, such as service bulletins and service information letters for time between overhauls and component life limits. (A-08-63)

Require parachute jump operators to develop initial and recurrent pilot training programs that address, at a minimum, operation- and aircraft-specific weight and balance calculations, preflight inspections, emergency and recovery procedures, and parachutist egress procedures for each type of aircraft flown. (A-08-65)

Require initial and recurrent pilot testing programs for parachute jump operations pilots that address, at a minimum, operation- and aircraft-specific weight and balance calculations, preflight inspections, emergency and recovery procedures, and parachutist egress procedures for each type of aircraft flown, as well as competency flight checks to determine pilot competence in practical skills and techniques in each type of aircraft. (A-08-66)

Regarding Safety Recommendation A-08-63, on October 28, 2013, the FAA stated that “we cannot legally require an owner/operator to adopt manufacturers’ recommended maintenance instructions” but that it encouraged operators to voluntarily review and incorporate those instructions. The FAA also stated that the requirements of existing regulations satisfied the intent of this recommendation. On December 12, 2014, the NTSB stated that it remained concerned that operators of aircraft used in parachute jump operations were not required to develop and implement FAA-approved aircraft maintenance and inspection programs.<sup>5</sup> As a result, the NTSB classified this safety recommendation “Closed—Unacceptable Action.”

Regarding Safety Recommendations A-08-65 and -66, on March 8, 2011, the FAA stated that its current regulations and planned revisions to Advisory Circular 105-2, Sport Parachuting, met the intent of these safety recommendations. The FAA also stated, “we decline to require specialized training and testing for pilots of aircraft conducting parachuting operations.” On June 16, 2011, the NTSB restated its concern that requirements for pilots of parachute jump operations were not consistent with those for pilots of other revenue-based operations, such as Part 135 on-demand operations. As a result, the NTSB classified these safety recommendations “Closed—Unacceptable Action.”

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<sup>4</sup> The NTSB also issued two recommendations to the US Parachute Association.

<sup>5</sup> In June 2012, the NTSB pointed out that the FAA had imposed extra requirements for Part 91K operations and could take similar actions for parachute jump operations.

### Appendix D: Part 91 and Part 135 Nonscheduled Air Tour Accidents, Flight Hours, and Accident Rates

For the data in the tables that follow, accident counts are sourced from NTSB data, and flight hours are sourced from the FAA’s annual General Aviation and Part 135 Activity Survey. The data represent air tour accidents involving helicopters and fixed-wing airplanes.

Year	Number of air tour accidents				Number of flight hours (in 100,000)		Accident rate per 100,000 flight hours		Fatal accident rate per 100,000 flight hours	
	Part 91		Part 135		Part 91	Part 135	Part 91	Part 135	Part 91	Part 135
	Accidents	Fatal accidents	Accidents	Fatal accidents						
2000	9	2	9	2	1.58	2.18	5.68	4.13	1.26	0.92
2001	7	1	10	2	1.61	1.83	3.72	5.45	0.00	1.09
2002	6	0	6	0	1.01	1.45	4.96	4.12	0.00	0.00
2003	3	0	7	4	1.39	1.59	2.15	4.40	0.00	2.51
2004	8	3	5	0	1.57	2.22	5.11	2.25	1.92	0.00
2005	8	3	9	1	1.63	3.35	4.90	2.69	1.84	0.30
2006	6	1	7	0	1.38	2.91	4.35	2.40	0.72	0.00
2007	4	0	6	4	1.20	5.02	3.35	1.20	0.00	0.80
2008	7	1	4	2	1.18	2.70	5.92	1.48	0.85	0.74
2009	7	0	4	1	0.85	2.22	8.27	1.80	0.00	0.45
2010	3	1	3	0	1.07	2.95	2.80	1.02	0.93	0.00
2011	6	0	4	2	Data not available					
2012	3	0	3	0	1.23	3.46	2.43	0.87	0.00	0.00
2013	5	1	4	1	1.22	3.41	4.09	1.17	0.82	0.29
2014	3	1	4	0	1.41	2.92	2.13	1.37	0.71	0.00
2015	3	0	3	1	1.24	3.25	2.43	0.92	0.00	0.31
2016	7	3	1	0	1.27	3.66	5.51	0.27	2.36	0.00
2017	8	0	6	0	1.77	3.74	4.51	1.61	0.00	0.00
2018	7	1	6	2	1.73	3.80	4.04	1.58	0.58	0.53
2019	9	2	4	3	1.21	3.09	7.47	1.29	1.66	0.97
<b>Total</b>	<b>119</b>	<b>20</b>	<b>105</b>	<b>25</b>	<b>25.55</b>	<b>55.75</b>	N/A	N/A	N/A	N/A

Note: Flight hours and, consequently, accident rates are unavailable for 2011 because the FAA did not publish activity survey results for that year.

Year	Number of fatalities	
	Part 91 air tour flights	Part 135 air tour flights
2000	2	8
2001	2	12
2002	0	0
2003	0	20
2004	8	0
2005	11	3
2006	3	0
2007	0	15
2008	6	5
2009	0	9
2010	1	0
2011	0	10
2012	0	0
2013	1	1
2014	1	0
2015	0	9
2016	8	0
2017	0	0
2018	5	10
2019	10	16
<b>Total</b>	<b>58</b>	<b>118</b>

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